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TENSION TOLERANCE

CHAIRMAN'S ADDRESS

HARRY S. GRADLE, M.D.

CHICAGO

It has been customary in the past for your chairman to discuss some one of the economic problems confronting our specialty or to present some scientific fact or observation. However, I have chosen to present for your consideration one phase of the glaucoma problem that is known but not adequately recognized; namely, the critical point in intra-ocular hypertension.

In view of the ever increasing blindness from glaucoma, it behooves us to exercise even more than usual care and caution in dealing with that disease. In a limited number of cases of compensated glaucoma, normal function of the eye may be preserved almost indefinitely without recourse to surgical intervention, and in other cases the use of surgical measures may be deferred many years before lack of control becomes evident. It goes without saying that, in an intelligent self-disciplined person, management of the disease without surgical procedure is preferable, provided the integrity of the eye is not thereby damaged.

Unfortunately, the majority of cases of compensated glaucoma are seen by the ophthalmologist only when the condition is fairly well advanced and surgical procedure is indicated without further quibble. This is particularly true with dispensary patients, who have universally the unfortunate tendency toward drifting until blindness is inevitable. It would be folly to try to control the disease in such instances by other than surgical measures and, as was so well emphasized in this section last year, time should not be lost before proceeding to the operation of choice.

Fortunately, in cases of compensated glaucoma time does not play the important role that it does when there is clinical evidence of a break in compensation. Evaluation of the situation without haste is permissible and the ophthalmic surgeon is not hurried into surgical intervention by the devastating swiftness of the disease. The fluctuation of intra-ocular tension under the influence of treatment may be studied and plotted graphically so that its influence on the functions of the eye can be determined. This leads to an inquiry as to what constitutes increased intra-ocular tension and what are the limits of normal intra-ocular tension. Obviously, no two eyes respond the same to variations in tension, and the endeavor to place a numerical evaluation on the upper limits of so-called normal tension is futile. It is possible to estimate that upper limit in each individual case only by a determination of whether the function of the eye deteriorates under the existing degree of intra-ocular

tension. Normal intra-ocular tension may therefore be defined as that degree of tension which the tissues of the eye are able to withstand without damage to function. And the final terms are dictated by the functions of the eye, the battleground between the ravaging destruction of increased intra-ocular tension on the one hand and the restraining influence of medical or surgical treatment on the other hand.

The function is obvious; namely, the act of vision. That act consists of three essential features in each eye: central field vision, peripheral field vision and central visual acuity. Consequently, any evaluation of the function of an eye must include accurate measurements of those three phases. Interestingly enough, there is a definite order of sensitivity of each aspect. Progressive loss of function due to hypertension will be manifest first by abnormalities in the central visual field, next by contractions of the peripheral visual field, and finally by a decrease in central visual acuity. With these facts in mind, it is evident that oft repeated estimations of the threefold aspects of vision are required to determine whether or not the function of the eye has suffered.

This is not the place to enter into a more or less theoretical discussion as to the reason for a pathologic increase in intra-ocular tension or as to the method whereby intra-ocular tension which is pathologically high for the eye in question produces the well known damage to function. This is rather a plea for the endeavor to ascertain whether intra-ocular tension that is commonly considered as above the upper tonometric limits of normal is really pathologic for the eye in question. In other words, what is the tension tolerance of the individual eye?

It is a well known fact that there are numerous instances of eyes in which the tonometric readings have ranged upward of 30 mm. of mercury (Schiotz scale) for years without damage to function in any one of its three aspects. It is also known that under the influence of emotion, physical stress or rarefied atmospheric conditions the tonometric tension will soar into the upper thirties and remain there for hours without damage to function. As opposed to that there are numerous cases on record of eyes whose functions have been lost with the typical picture of compensated glaucoma but in which the tonometric readings have never even approached the upper limits of the so-called normal. (This does not include the cases of Schnabel cavernous atrophy in which the loss of function and the clinical appearance are due to pressure by hardened arteries on the nerve trunks.)

These incidents are cited merely to show that intra-ocular tension which is damagingly high for one eye is still within the normal limits for another. This is just as true for an eye previous to medication as it is for one under the influence of miotics. Therefore, before pronouncing an intra-ocular tension pathologic it is necessary to determine whether that degree of tension is producing damage to the functions of the eye. If

repeated measurements show increasing pathologic abnormalities of the central field or contractions of the peripheral field or decreasing central visual acuity, then the tension tolerance of the eye has been exceeded and measures to decrease the existing tension must be instituted. Whether such measures should be of a medical or of a surgical character depends on the individual case and on the judgment of the ophthalmic surgeon. But the indication for the institution of such measures is the same in either instance; namely, that the eye cannot tolerate the degree of existent tension without damage to function.

There is nothing new in this line of thought or method of procedure, but the term tension tolerance is somewhat more comprehensive in its meaning as here expounded and emphasizes the idea that the indications for the medical or surgical lowering of intra-ocular tension are based on the influence of tension on function rather than on the mere existence of intra-ocular tension increased beyond the empirical numerical upper limit of so-called normal.

58 East Washington Street.

INDUSTRIAL ASPECTS OF EAR, NOSE AND THROAT PRACTICE

HAROLD A. FLETCHER, M.D.

SAN FRANCISCO

The development of state industrial accident commissions, marine industrial commissions, industrial accident insurance and public liability insurance has become so great that many private practitioners are becoming involved in this work, whereas a few years ago many refused to accept it. During the last twenty years I have had wide experience with this type of work. By far the greatest part of my industrial work has been acting in the capacity of referee or consultant, in cases which had previously been examined and treated and reported by from one to ten or more different physicians. Patients have been sent either by the state industrial accident commissions or by the insurance carriers in California and neighboring states, or in some cases patients have come on their own initiative for an independent opinion.

I feel that the best way for me to approach this subject is to discuss critically the way this type of work has been handled as I have had an opportunity to observe it. I have had a great opportunity not only to see a large variety of cases and conditions but also to get a good insight into what other men think, how they approach a given problem and their strengths and their weaknesses.

Over this period of time I have become more and more impressed with the fact that a great many doctors have very little understanding or have actual misconceptions of the problems involved in this type of work. There has been some improvement during the last few years, but a good many men still make snap diagnoses and jump to conclusions and feel disgruntled when they have to furnish reasons for their conclusions. Some feel that a written opinion is unimportant or beneath their dignity and that no one has any right to ask for it. Some feel that the fees for such cases and reports do not warrant careful and painstaking examinations and thought. As far as fees are concerned, I have found

that, although they are below the average regular fees for private work of a similar nature, insurance companies and commissions are willing to allow a very fair return for good and able service. They are learning that cheap medicine is often the most expensive for them. Outlooks differ, but to me the most intriguing part of this work is the necessity of giving a written opinion with my name signed to it, knowing that some other specialist may not only disagree with me but have good reasons for doing so.

EXAMINER'S PROBLEM

There are three interested parties involved in each case: There is the injured patient, who usually and naturally wants as much compensation as he can obtain. There is the insurance carrier or self-insured employer who does not want to pay any more than he is legally responsible for. Lastly there is the industrial accident commission, which reviews the case, determines the responsibility, fixes the compensation if due and tells the insurance company or employer what amount the injured patient must be paid. The position of the ear, nose and throat specialist in relation to these three is to determine and report the facts and interpret them without fear or favor to any one of the interested parties.

To do this it is necessary to answer certain definite and fundamental questions in each individual case: 1. Is there a pathologic condition present? 2. Is the cause of the condition industrial or is it nonindustrial? 3. Does the condition create disability? 4. Are there other more probable existing or preexisting nonindustrial conditions which are contributing to or aggravating the condition, and is it necessary to correct these? 5. Can the condition be corrected? 6. Is the condition stationary or will it probably improve or get worse? 7. If stationary, what degree of disability exists, or, in other words, what has the patient lost that makes him less able than formerly to carry on his work? These questions should be faced honestly and answered as intelligently as the available facts and judgment permit.

One of my chief criticisms of many men doing this work is that they take sides in a certain case and allow prejudice to creep in. There is often a tendency for a consulting physician to try to build up a case as a lawyer would to win a case, hiding facts which hurt his side and unduly emphasizing points which will help to prove his side. I suppose that in some cases this is a natural reaction, but it should be fought against and suppressed, as in the end it almost always reacts to the physician's disadvantage and injures his reputation. It is more noticeable in those doing work more or less exclusively for large corporations and those doing public liability work whose expert testimony is readily available in medicolegal cases. It often surprises me that a doctor will assume an almost personal responsibility for an injury or the results of an injury when he should in no way have any personal feeling in the matter.

EXAMINER'S APPROACH

Another interesting and general aspect, which is of importance in this work, is the attitude and approach of the doctor toward the patient. One encounters all types of personalities and characters among these patients. There are the strong and the weak, the cowardly and the brave, the aggressive and the retiring; there are the honest and the dishonest, the chiselers and racketeers, and there are different racial elements and other psychologic factors. In general too there is the fear complex of loss of functions, loss of time from

work, loss of income with family responsibilities and dependents, the bitterness of the economic situation and bitterness and suspicion toward employer, insurance company and doctor. Then there are other groups with a neurotic predisposition and the group which has a low pain tolerance. A sympathetic and understanding approach to the injured patient is of greatest help in obtaining the best cooperation between physician and patient. Even in the face of obvious lying and malin-gering, and even in cases in which there is a tendency toward a clash of personalities between the physician and the patient, it is a wise doctor who does not press his own views or feelings on the patient during his examination. One must be careful not to jump at the conclusion that a patient is neurotic or hysterical or a slave to imaginary complaints till one has proved that there is no organic basis for them, and then one has to evaluate all the foregoing factors to arrive at the reasons for the patient's reactions. This means that a little knowledge of psychology must be applied to ear, nose and throat work in these cases. A little thoughtful, sympathetic understanding of these points on the part of the specialist has been the means of rehabilitating a great many patients, whereas examination by a doctor with a hard-boiled attitude would have done untold harm. On the other hand, certain types need and thrive on more brusque and hard-boiled tactics. A good deal of care and judgment is necessary to make a decision in a given case.

IMPORTANCE OF EARLY EXAMINATION

There is still prevalent a tendency on the part of general physicians and surgeons and insurance carriers to delay calling in a specialist, particularly in cases of multiple injuries and in those of head and skull injuries. This delay has often led to greater disabilities and difficulties later in fixing a fair compensation. Insurance carriers, as well as some general surgeons, are learning this and in larger centers have corrected this to a certain extent. In smaller communities where the services of specialists are not readily available the delay cannot be helped. The result of delay in not having a specialist examine and make notes on the case as soon as possible after the injury often leads to many difficulties later on. A true history is often obtainable soon after the accident when the patient and relatives wish to cooperate with the doctor to aid in recovery as soon as possible. Later, when acute symptoms have subsided and compensation factors have begun to work, the patient often colors the history so as to make it appear that preexisting conditions were caused by the accident. Examination made as soon as possible after the injury, with careful notes, are of greatest importance. A history of existing chronic sinus infection, chronic or recurrent aural discharge, previous loss of hearing and the like not only may have the greatest bearing on the immediate treatment but may later be of the greatest importance in evaluating disability.

A careful history and consideration of the mechanics and careful, accurate first examination notes of the injury, how it was caused and how it occurred should always be obtained when possible. This point is often neglected and at times assumes great medical as well as medicolegal importance. Recently a patient received a blow over the left eyebrow when he stepped in a hole in the floor while he was carrying one end of a sofa. The end of the upturned sofa leg, about $2\frac{1}{2}$ inches in diameter, struck him as he fell forward against it. A bruise was caused which was described by the general physician called in as being over half an inch to the

left of the midline. A few days later an acute frontal empyema of the right frontal sinus, maxillary and ethmoids developed. A local specialist operated on the frontal sinus externally and later, in consultation with another specialist from San Francisco, reoperated on it. Weeks later the patient claimed compensation for medical and hospital care and loss of working time on the basis of his injury. The local specialist said that the injury undoubtedly caused the frontal abscess. The San Francisco consultant refused to commit himself. The evidence, from the notes of the first physician, showed that the bruise was over the left frontal sinus at least one-half inch from the midline. The roentgenograms showed the dividing frontal septum to be in the midline. There was no involvement of the left frontal sinus. The mechanics as to how the blow occurred, the size of the object, the direction and severity of the blow, all taken together, decided the case against the patient in favor of the insurance carrier.

In many cases the specialist is asked to examine and give an opinion on the patient any time from months to years after an injury. Some insurance companies or their claims department see no reason why such a consultant should want to review the files and reports of the original accident and reports showing what happened between the time of the injury and the time the consultant is called in for an opinion. I have always insisted on these reports if in any way accessible, even when the site of the alleged injury is far from the head and neck. In one case a bilateral very marked deafness of the internal ear was claimed by a patient who had lost a leg and had an abdominal injury two years before. Two specialists had claimed that his deafness had nothing to do with his injury. The industrial accident commission sent him to me as referee. I obtained the hospital records after some delay and reluctance on the part of the self-insured corporation which employed the patient. In these I found that the patient had had two secondary hemorrhages almost to the point of exsanguination, had been under several ether anesthetics of long duration at this time and had complained to the nurses and doctors of severe tinnitus in both ears following these, and later of impaired hearing. Although the original injury did not directly cause the deafness, it was quite possible that a very severe hemorrhage combined with long anesthetics and general infection might have. So it is of the greatest importance that, before rendering an opinion or even making an examination, all available data be obtained by the consultant. If such data are not available, one must qualify one's opinion in certain cases.

METHOD OF EXAMINATION

As to the examination itself, it should be as complete as possible, and observations should be made with meticulous care, all the necessary methods and tests being used. Nothing should be taken for granted. Tests reported by previous examiners, unless one is sure of them, as in the case of x-ray and laboratory tests, should be checked and often rechecked. The examiner should always remember that when he signs his name to a report it may be subject to review by another specialist, who may not be his friend, and if the original examiner has missed a perforation in the ear drum or has not noted that a nasal septum has been previously operated on his competitor can make him look foolish.

In this regard I want to make one suggestion: A specialist should not try to make the other man look foolish or put him in an embarrassing position. He should be honest and frank in his differences of opinion and give his reasons but should not rub it in—it may

backfire! There are many cases in which honest differences of opinion can exist and in which at times both sides may be partly right and neither side completely right. There are many cases in which it is really a matter of opinion or experience as to whether the injury is the cause of the trouble or not, with no definite deciding factors present.

The foregoing has been concerned mostly with general considerations which I have found are often not understood by many doing this work. There is not space nor is it my purpose in this paper to name and describe a long list of industrial injuries. Rather it is to point out some of the important points and problems which in my experience have caused the most confusion and difficulty in evaluating.

INJURIES TO FACE, NOSE AND SINUSES

Injuries to the face, nose and sinuses I find are in general fairly well understood and treated. The cause and effects are perhaps more obvious, although even here one must not jump at conclusions. The time and method for the resetting and replacing of depressed and fractured bones, operations on sinuses for drainage or curettement, treatment of cosmetic defects and maxillary fractures involving the alveolar process and causing malocclusions of the teeth are all well known. Fractures involving the inner plate of the frontal sinuses or through the ethmoids and sphenoids must be carefully studied and watched and nothing must be done to disturb these regions until such time has elapsed that one is sure not to cause deeper intracranial infection unless complicating symptoms make procedures necessary. The question that often arises is this: Has a given moderate or mild injury over a sinus caused the sinus infection? This question is often hard to decide. Under normal conditions even a fairly marked fracture of the wall of the maxillary, frontal or ethmoids does not cause a sinus infection. There may be sterile blood clots which drain out, and that is all. On the other hand, when infection is found it is difficult to say that even a moderate contusion was not the initiating cause. Coincidental presence of an acute infection of the upper respiratory tract with injury to a sinus does not relieve the injury of a possible causal responsibility. Pre-existing chronic sinus infections may be lighted up by injury over one sinus, and if it was a chronic pansinus infection all the sinuses are apt to flare up. The difficulty is in the proper evaluation of what effect the injury had on the existing condition. In other cases shock, hemorrhage, exposure and fatigue following injuries to distant parts must be held as the indirect cause of acute exacerbations of chronic sinus infection and their complications. Sinus infection and obstructive nasal conditions following short or continuous exposure to certain kinds of smoke, gas fumes, chemical dusts and irritants are often hard to evaluate, owing to individual tolerance and predisposing or preexisting causes. Under this heading come the many allergic factors. Usually having the patient change his occupation or place of work will clear up the condition, but the patient often fights off his trouble to keep his job until his nose and sinuses are in such a state that long, expensive treatment is necessary. Irritants are occasionally self instilled in the nose by the patient, as was done by one of mine who, even when hospitalized, was caught snuffing pepper into his nose.

LOSS OF HEARING

The question of loss of hearing following injuries either directly to the ear or nearby parts or indirectly

from injury to distant parts I have found to be one of the most difficult problems to analyze and one which causes more confusion in the minds of other specialists than anything else. In many cases the problem of dizziness and vertigo is combined with the deafness and tinnitus, and the problems are overlapping.

There are, of course, the long lists of obvious direct injuries to the ears which give little trouble in diagnosing and evaluating. Foreign bodies, sparks, chemicals getting into or being forced into the ear, blows over the ear causing rupture of the drum, explosions causing an inner ear destruction—all these are usually easy to understand. The important question that always arises in the case of secondary otitis media is: Was the otitis media coincidental and the cause of the ear condition or was the otitis media caused by the injury? Careful questioning of the immediate train of symptoms following the injury and immediate careful examination of the external canal and ear for other signs of injury will often decide this point.

Not so obvious are those cases of injury to the skull involving either the region of the ear and mastoid or more distant parts, after which the patient claims loss of hearing and tinnitus due to his injury or claims vertigo as an incapacitating disability, or both. The two divisions of the inner ear, the cochlea and the labyrinth, are probably the two most often affected parts in head injuries. It has been my experience that there is more misconception of injuries to these parts than in any other field in this type of work. Of the two divisions, I have more trouble analyzing and evaluating the industrial loss of hearing to my own satisfaction than analyzing and evaluating the changes in vestibular function leading to vertigo and imbalance. Yet in reviewing many hundreds of reports of other specialists and neurologists I find them much more confused over the vestibular complaints and manifestations. The trouble seems to lie in a lack of knowledge as to what can happen to both divisions of the internal ear and their intracranial connections in the brain, what symptoms are caused and how to determine by tests whether such injuries or disturbances are present.

It used to be much more simple to decide these factors than it is today. There were certain dogmatic rules based on theory rather than facts which, if followed, made conclusions easy if false. I remember that after I read a paper¹ before this section in 1922 I was given a great working over by none other than Dr. George Shambaugh for stating that partial internal ear deafness could be caused by skull injuries and concussions. It was his view that the cochlea was either totally destroyed or remained free of injury in such cases and that the labyrinth was totally destroyed or remained free of trouble with the cochlea. Dr. Shambaugh and others may still feel the same way about it, but I think that most of us are convinced, not only from our clinical experience but from the wide observation of many on microscopic pathologic changes, backed up by the experimental work of others, that partial inner ear deafness and partial destruction of labyrinthine function can, and not uncommonly does, occur in various head injuries without complete destruction being caused. We are further convinced that the pathologic condition may be found in the inner ear itself, in the nerves or substance of the brain or in a combination of these locations. Space

1. Fletcher, H. A.: Determination of Disability as to Loss of Hearing and the Importance of Vertigo in Industrial Accident Cases, J. A. M. A. 79: 529 (Aug. 12) 1922.

does not permit of description of the pathology and mechanics of these disturbances, the location and type of fractures, the changes in the cochlea and labyrinth secondary to changes in circulation and cell structure, small hemorrhages into the perilymph spaces and in substances of the brain stem, commotion and shattering of the organ of Corti, secondary connective tissue formation, and the like. For reviews of the literature and references on this subject I particularly recommend the papers of Grove,² Linthicum³ and Schaller.⁴

Even greater than the confused knowledge as to what may happen in these injuries is the superficial knowledge as to what observations and tests are necessary to determine evidence of the pathologic condition and how to make them, as evidenced by the reports I have reviewed. The vestibular examinations are of the greatest importance in shedding light on these conditions; yet, to be of any value to the patient, the brain surgeon or neurologist or to the reviewing commission, they must be carefully carried out. Perfunctory and casual examinations are worse than none at all in many cases. The very careful observation of spontaneous nystagmus, past pointing and postural unbalance can be made only by repeated observations, good lighting conditions and care in elimination of outside factors not pertaining to the vestibular apparatus. The various tests of turning, head movement and caloric stimulation must be carefully and unhurriedly made and not made by just going through the motions.

I have found definite spontaneous vestibular nystagmus of a pathologic nature, or spontaneous past pointing, in so many cases in which it had been missed previously by other examiners that I feel sure that a great many men either do not understand the subject or, worse, make superficial observations. To me the spontaneous reactions may be of even greater importance than the induced reactions. Although not common, and somewhat differing from observations of other men doing this work well, I have noted quite a few patients with a spontaneous vertical nystagmus. Spontaneous past pointing, while definitely under some voluntary control of the patient, properly evaluated, has at times definite importance in judging a case.

As for the labyrinth tests themselves, there are men who confine themselves simply to turning the patient; other men confine themselves to mass caloric irrigations and turning tests; others use only the Kobrak test or the small measured amounts of water, paying particular attention to the finer gradations of latent time, character and duration of the induced reactions. I myself feel that one misses certain important signs unless one uses each of the methods in selected cases. In addition I frequently use the bi-aural mass irrigation in the two ears simultaneously, which often brings out an unbalance between the different canals that would otherwise be overlooked. There is one reaction with this test which I formerly considered as evidence of intracranial disturbance, and this is a vertical nystagmus upward after bi-aural caloric stimulation of the two horizontal canals simultaneously. As this occurs occasionally in normal patients who have been examined for demonstration purposes, I have long been suspicious that this reaction may have no pathologic significance, and recently I have

learned from Dr. Spiegel⁵ of Temple University that Brunner⁶ and others do not consider it pathologic. Regardless of the method used, careful description by the patient of what he means by his feeling of dizziness, and meticulously careful observation of spontaneous and induced reactions will decide the difference between a functional or an organic disturbance, and usually the difference between a peripheral and a central lesion. These are the points of importance to be determined. If the patient is shown to have normal labyrinthine reactions, he has in my opinion no organic cause for his complaint of vertigo. If he has a marked hypor-irritable labyrinth on one side and a normal or hyperactive labyrinth on the other, there is in my opinion a peripheral partial destruction of one labyrinth, and these patients are much more incapacitated for a longer time than if there was complete and total destruction on one side. If the patient presents signs such as spontaneous nystagmus, perverted induced reactions of nystagmus or past pointing, falling and the like, a disproportion between reactions of one set of canals as compared with the other, marked reduction in the normal general reactions of nausea, sweating, pallor, vomiting and the like, the indication is that the lesions are central in character, and this type of disturbance is apt to cause a more or less severe disability permanently or for a very long period of time. If the patient shows the uncomplicated aspects of a complete destruction of only one labyrinth, the prognosis is good for the clearing up of vertigo in from a few weeks to a few months.

As stated before, in my opinion the evaluation of disabilities from the vestibular or vertigo standpoint is much more clearly determined in relation to the accident or trauma than is that of disabilities of hearing. Many patients have a preexisting loss of hearing, either stationary or progressive, perhaps of such gradual onset or of such long duration that they have taken little note of the trouble. The hearing loss has not as yet constituted a disabling factor. One sees a large number of these in one's daily practice, with no history of trauma. If a patient suffers from vertigo he rushes to a doctor, but if he has a gradual loss of hearing he often stays away as long as he can. Of the two conditions, dizzy attacks are far more disabling than loss of hearing, and in this I agree with Ruttin,⁷ Rhese⁸ and others. Therefore, it is often very difficult to say that a patient claiming hearing loss after trauma to the head may not have had a preexisting loss to account for it.

Certain patients present no particular difficulties. The obvious transverse fracture of the pyramid with or without bleeding from the ears and complete destruction of the labyrinth and cochlea, the longitudinal fracture usually causing bleeding from the ear and possible evident disturbance and rupture of the drum and middle ear structures are cases in point. Those cases with marked unilateral or bilateral deafness following explosions through air concussion forces, also certain cases of head trauma in which definite coexisting evidence is found of disturbances of the labyrinth and vestibular pathways, may be fairly easily diagnosed correctly as attributable to the injury.

5. Spiegel, E. A.: Recent Advances in Neurology of the Ear, *Confinita* *neurolog.* 1: 59, 1938.

6. Brunner, Hans: *Tr. Am. Acad. Ophth. & Otolaryng.*, 1935.

7. Ruttin, Erich: Ueber frische traumatische Läsionen des Labyrinths, *Monatsschr. f. Ohrenh.* 46: 475, 1912.

8. Rhese, K.: Beiträge zur Kenntniss der Beteiligung des inneren Ohres nach Kopferschütterungen, *Deutsche med. Wchnschr.* 32: 625, 1906.

2. Grove, W. E.: Otolologic Observations in Trauma of the Head, *Arch. Otolaryng.* 8: 249 (Sept.) 1928; *Skull Fractures Involving the Ear, Laryngoscope* 49: 678 (Aug.), 833 (Sept.) 1939.

3. Linthicum, F. H.: Neuro-Otological Observations in Concussion of the Brain, *Arch. Otolaryng.* 12: 785 (June) 1931.

4. Schaller, W. F.: After-Effects of Head Injuries, *J. A. M. A.* 113: 1779 (Nov. 11) 1939.

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But those cases of skull fracture not involving the temporal bone, or head injuries without fracture in which cerebral concussion symptoms were mild or absent but in which a loss of hearing due to the accident is later claimed, are often hard to evaluate or differentiate from preexisting hearing loss. It is in this group that one often finds the malingerer and the exaggerator, but one also finds honest loss of hearing which is the direct result of the accident. These cases often show evidence of previous middle ear processes which one is morally certain caused previous loss of hearing. It is also known that many nontraumatic private patients may have very advanced losses of hearing with no tangible evidence as to the cause. The hearing tests and audiometer curves in a traumatic case may be very similar to cases with no history of trauma. One point which has shown up consistently in my experience is the presence of markedly shortened bone conduction in most cases of skull fracture regardless of its location, and in many cases of only a mild or no loss of hearing by air conduction. This curtails the usefulness of bone conduction examination in many cases.

In cases in which hearing loss is claimed in only one ear there is the good ear for comparison. In my experience hearing defects in head injuries are far more often unilateral than bilateral, and the injured ear is more often on the side of the skull injury. If the ear in which a loss of hearing is claimed shows a different form of audiometer curve as compared with the ear in which no injury is claimed, it is presumptive evidence that the loss is traumatic. Bilateral loss of hearing, however, does occur but in my opinion rarely to the same degree in the two ears, except in the more profound losses found in basal fractures or severe cerebral concussions. When I find an almost equal bilateral loss of hearing with parallel audiometer curves of the usual abrupt or gradual high tone loss seen in nontraumatic cases and of only mild or moderate degree I am inclined to consider it nontraumatic in origin. It is conceivable that destruction of the same degree may occur through concussion transmitted through the two endolymphatic ducts, but I feel that this is rare.

Malingering or faking hearing loss is frequently encountered, and these cases are often missed. Many times patients cause suspicion by overacting their loss, but often suave actors with all the appearances of honesty are found malingering. The easiest to detect are those claiming complete or almost complete unilateral deafness. Many catch tests or confusion tests detect these cases, but the most conclusive test is the Stenger test. Malingering of marked bilateral deafness is often hard to prove, particularly in cases in which frequent tests have been made by many examiners. Discrepancies in repeated audiometer tests are often evidence of malingering, and audiometer tests should be carefully rechecked in most cases. Sometimes the only way to detect these discrepancies is for the insurance company to have a detective watch the patient.

COMPENSATION FOR LOSS OF HEARING

The rating of compensation for loss of hearing is interesting. The patient is usually compensated on the basis of what hearing he is reported by the ear specialist to have lost through the accident. It is also based on the impairment to his ability to carry on his work which has resulted. The duration of the compensation or total amount is based on the estimated time a willing patient would ordinarily take to rehabilitate

himself, either in his previous work or in taking up some other line of work more in keeping with his disability. The question arises as to what constitutes useful hearing. A patient doing certain kinds of labor may not be in any way incapacitated with a bilateral 25 per cent loss of hearing, whereas other types of work may necessitate almost normal hearing. In California the commission allows a 40 per cent disability for a 100 per cent bilateral loss of hearing, which means 160 weeks of compensation at 65 per cent of his previous average weekly wage. A 25 per cent loss of hearing in both ears is rated as a 10 per cent disability, which means forty weeks of compensation at the rate of 65 per cent of his previous average weekly wage. This is possibly too much in the case of a laborer and too little in the case of a mechanic whose work may need acute hearing. I think that otologists experienced in this work should make a group study of this aspect and attempt to arrive at a possibly more accurate standard method of rating hearing losses.

COMMENT

This presentation of industrial aspects of ear, nose and throat practice touches only on some of the broader problems as I have seen them. Many of these problems are not recognized by as many otologists as they should be. Many points are controversial, and I think that an effort should be made by the members of our specialty to give the subject the benefit of group study and discussion to clarify these controversial points as much as possible. The subject is becoming increasingly important and with the possibility of war on the horizon may become acutely so, because war disabilities and industrial disabilities have a great deal in common.

490 Post Street.

ABSTRACT OF DISCUSSION

Dr. W. E. Grove, Milwaukee: The line of practice to which the author refers is almost entirely medicolegal in character. Industrial medicine and surgery is a large and ever growing field. A doctor can and should handle these cases in a manner so efficient and so impartial that he retains the respect of the injured, the employer, the industrial commission and the courts. Industrial medicine and surgery should be done by a doctor with these qualifications. Dr. Fletcher is quite correct in saying that the most difficult question to evaluate after a head injury is the alleged loss of hearing. In the first place, after a head injury of any severity there is a clouding of the sensorium and of the hearing immediately following the injury which frequently clears up. If the patient is unscrupulous or neurotic, he may easily project this symptom into the future. Second, there are many cases in which the loss of hearing antedates the injury and the cause for such loss of hearing must be investigated. Third, the hearing defect after a head injury should fall into certain well established patterns, depending on the nature of the pathologic condition: a transverse fracture of the pyramid, a longitudinal fracture of the temporal bone, or a brain concussion with no demonstrable bone lesion. If the hearing defect does not fall into these patterns, one should be suspicious of trauma to the head as a causative factor. To estimate how much disability a hearing loss constitutes to the individual in general and to the individual in his own particular line of work is difficult. Complete loss of hearing in one ear is probably not as important to the individual as complete monocular loss of vision, and it is probably not as disabling as persistent vertigo. I cannot agree with the author that the loss of hearing affects only one ear in the majority of cases. In my experience the reverse is true, although I will admit that one ear is usually more involved than its fellow. The disabling effects of vertigo are variable, depending on its severity, its frequency and the nature of work engaged in and must be evaluated individually for each particular person and for each particular occupation. I agree with Dr. Fletcher that the spontaneous signs and symp-

toms of a deranged vestibular function are of more value in studying and evaluating the vertigo than induced labyrinthine reactions, but for a complete evaluation of the disabling effects of vertigo we must combine the psychologic characteristics of the patient, the complaints as offered, the spontaneous signs of vestibular derangement, the induced labyrinthine reactions and the occupation of the patient.

DR. H. A. KUHN, Hammond, Ind.: The otologist rarely knows anything of the previous hearing experience or the extent of injury by immediate examination of an injured employee. A phase of industrial otolaryngology which seems to be unclear is the otologic aspect, especially industrial deafness. Polokov, in his book *The Power Age*, states that "the labor specifications for a really modern industry are expressed in three terms: (1) sustained attention, (2) clear perception and (3) quick reaction, and only the most competent will be useful in industry." Speedups in rearmament will demand more competence of employees. Hence the problem of preventive otology should in the near future assume a very important position. During the last ten years this consciousness of accurate hearing in industry has seemed to come to the fore. Whereas it was formerly uncommon to have men from industrial plants complain of hearing difficulties or to have them rejected for employment unless the hearing difficulty was very marked, it is now quite common for them to notice that they do not hear the operation of machinery as accurately as formerly, and they are more frequently being rejected for hearing difficulties. In the future in otology just as in ophthalmology much more extended investigative work will be done in the employment divisions of modern industry. The problem of industrial deafness resolves itself into a matter of preventive medicine. After there has been injury to the end organ by repeated shocks and noises, we are at a loss to help the patient. Therefore, as otologists, we should practice more preventive measures. We should attempt to recognize these conditions in their early stages and we should try to do something to prevent workers from suffering repeated injuries to their ears. The only way to arrive at conclusions in this matter is to (1) record the hearing of all new employees, (2) at intervals recheck all those working and at shorter intervals all those subjected to persistent loud noises such as air hammers, and (3) make careful examinations of the ear, drums, nose and throat, investigate the family history and see to the moving of employees who show progressive hearing lesions to departments in which they are not subjected to otologic trauma, just as men subjected to a lead hazard are moved to completely free areas as soon as evidence of circulating lead is discovered. With the rearmament program going ahead full speed, the physical defectives interfere with the progress of that program. They must be kept from key points in modern mechanized industry by selectivity, and only by selectivity can we as medical men defeat this disintegrating influence on our national rearmament program.

DR. WALTER F. SCHALLER, San Francisco: A neurologist often leans heavily on the otologist, and I am going to take this occasion to testify my appreciation of the help I have often received from your specialty. Vertigo or dizziness as described by the patient often concern me much more than deafness. By complaint of "dizziness" the patient may mean a true vertigo, or he may mean a feeling of faintness or inability to walk in a straight line, all of which symptoms may be quite different in origin. The symptoms may be psychoneurotic in origin or due to an irreversible postconcussion state. In the psychoneurotic, whom I shall not discuss here, such symptoms are usually hysterical and due to a fixation of previous experience.

DR. REA E. ASHLEY, San Francisco: The need for more information of the type presented by Dr. Fletcher is great in this age of high industrialization with its incident development of industrial accident commissions, industrial accident insurance, public liability insurance and the various government insurance agencies. As time goes on, general medical men as well as specialists will be called on more frequently to render opinions on industrial injuries. Very little has appeared in the literature regarding this increasingly important subject and what has appeared has been fragmentary. It is desirable to have some standardization of methods of examination and correlation of symptoms to the pathologic condition as a guide for those of us

who see these cases only occasionally. The only method of obtaining such a guide is by the accumulation of the experience of those men who see great numbers of industrial injuries and the careful preparation of such data and statistics. May I offer the suggestion that the chairman of this section be requested to appoint a special committee to accumulate as many data as possible on the subject and from this information to suggest a *modus operandi* for the examination of head injuries as related to our specialty, together with an outline of any other information that may be helpful in drawing correct conclusions regarding the percentage of disability and the probable prognosis in these injury cases. The plan will necessarily have to be broad, since each case will present its own problems; but, if some base line can be established as a point from which to start, much will have been accomplished. The information will be of the utmost value to the general physician, the specialist, industrial accident commissions, insurance actuaries and the United States government.

DR. HAROLD A. FLETCHER, San Francisco: There are so many controversial angles which often arise in cases of head injuries that the medical profession, including specialists, is often put in the position of not knowing or understanding, and of not having any standards of agreement in these conditions. The legal profession, the industrial accident commissions and the lay public get the idea that we do not know what we are talking about. Lawyers use this confusion to trump up for their clients permanent disabilities from absurd alleged injuries. I have seen so much of this, arising from illogical controversial discussions in the medical reports I have reviewed, that I feel it high time that we as a group should come to some agreement on standards of computing industrial disabilities.

TREATMENT OF DISEASES OF THE THROAT

LYMAN G. RICHARDS, M.D.

BOSTON

The term "throat" as understood for purposes of this discussion is conveniently divisible into the mesopharynx and the hypopharynx. The mesopharynx is bounded posteriorly by the posterior pharyngeal wall, laterally by the lateral pharyngeal walls, superiorly by the nasopharynx and inferiorly by the larynx and upper pharyngeal end of the esophagus. Anteriorly it is bounded by the base of the tongue and by the open space directed toward the mouth. The chief organ within the hypopharynx is the larynx, bounded above by the mesopharyngeal space, posteriorly by the upper end of the esophagus, inferiorly by the trachea and anteriorly by the base of the tongue.

THE MESOPHARYNX

Within the mesopharynx lie the well known masses of lymphoid tissue, more or less symmetrically arranged to constitute Waldeyer's ring, which through their tendency to disease constitute such a large factor in the field of laryngology. Chief among these primary pathologic conditions affecting these lymphoid structures are the various infections divisible into acute and chronic. While the different masses of lymphoid tissue within the mesopharynx often share in irregular fashion in such infection, in a high percentage of cases the larger masses or faucial tonsils may be taken as representative of such infection and the treatment applied to them as the basic essential for other smaller areas with similar involvement. Thus simple acute follicular tonsillitis with its almost classic symptomatology is

representative of the commonest form of acute lymphoid infection. Its treatment consists of two parts, the systemic and the local. Patients suffering from acute tonsillitis should be kept in bed on a liquid or semisolid diet designed to relieve the almost constant dysphagia and permit assimilation of nourishment with as little discomfort as possible. I believe that a daily dosage of 15 or 20 grains (1-1.3 Gm.) of acetylsalicylic acid is helpful, supplemented, according to the discomfort, with codeine or even morphine, as designed to insure the patient as much general comfort as possible. I believe that properly constructed and properly applied hot moist external compresses of cotton sheet wadding saturated in saline or isotonic salt solution and closely applied around the patient's neck are definitely comforting in spite of the apparent objection that nothing is actually absorbed through the surface skin. If instead of saline solution some one of the proprietary preparations containing additional medicaments such as sodium perborate, sodium carbonate and small amounts of essential oils is utilized, the comfort of the patient is still further enhanced. With respect to internal therapy, I doubt greatly the efficacy of a gargle since the process of gargling approximates the tongue and soft palate in such a way as to keep any gargle material quite away from the tonsil surfaces. The sucking of various anesthetic lozenges containing such medications as chloroform, I believe, affords some comfort when the medication is swallowed, as does also the present popular aspirin. I like the application to the surface of the tonsil itself of 2 per cent silver nitrate, great care being taken that the drug comes in contact only with the tonsil surface and its crypt. I have almost equal enthusiasm for the local application of either 1 per cent aqueous methylene blue or gentian violet. Finally, I believe in hot saline or dextrose irrigations given with the patient's head well forward and by a nurse who understands the technic and who appreciates that the hotter such solutions are given the greater their efficacy. The aforementioned therapeutic measures should if possible be made a matter of daily routine. Finally, I believe that the use of an infra-red lamp, placed at a distance of 18 or 20 inches from the side of the patient's face and utilized for fifteen minutes three or four times a day, is a useful adjunct. In view of the self-limited nature of the disease, I cannot as yet bring myself to believe that routine use of sulfanilamide is either necessary or advantageous. My few experiences with it have led me to believe that, if given as commonly advocated, it frequently makes the patient more uncomfortable than the initial disease. In the absence of systemic complications or signs of systemic toxemia, I do not see indications for its use in simple acute tonsillitis.

The treatment of pharyngeal diphtheria, fortunately so increasingly infrequent, is quite obvious. Cultures should be taken of any suspicious membrane and, with the diagnosis of diphtheria returned from the laboratory, diphtheria antitoxin in adequate doses should at once be administered. The dosage may range from 5,000 to 30,000 units, according to the severity of the disease. Care must be taken in excluding possible sensitivity to serum by small intradermal injections of a single drop of antitoxin and observing the patient for local or systemic reactions.

Vincent's angina, affecting the mesopharynx and most commonly the tonsillar surfaces, is, owing to the anaer-

obic nature of the positive organism, best treated by the application of oxygen-bearing medication to the affected necrotic surface areas. Most satisfactory of these I still find 7 per cent chromic acid applied on a cotton tip swab two or three times a day. This should be supplemented by suitable measures for the attainment of as good oral hygiene as possible, such, for instance, as a mouth wash of sodium perborate or the commercial vince or pharyngeal irrigations with a 1:10,000 solution of potassium permanganate. Strict attention should be given to the gums to prevent any spread of the infection to peridental areas. Local application of arsenicals such as arsphenamine is also a satisfactory form of treatment and in those rare instances in which the systemic signs with elevated temperature become evident, such arsenicals should also be given intravenously. Still more recently, but with less experience, I have been pleased with results obtained from the use of antimony and potassium tartrate (5 per cent). In view of the contagious nature of this condition, the patient is first isolated with particular attention to segregation of his food and eating utensils and other articles by which contamination may occur. So-called acute streptococcal sore throat, often epidemic in origin, and with inflammation more diffuse and less restricted to the tonsils themselves, has heretofore offered a most discouraging outlook from a therapeutic standpoint owing to the inability to achieve any specific therapy for this infection. The same measures designed to relieve discomfort in acute follicular tonsillitis are of course indicated here with the addition, particularly in the effort to combat systemic symptoms, of sulfanilamide, which is a most welcome specific agent in this disease. Variations in dosage and methods of its calculation are somewhat beyond the scope of this discussion, and the ever present possibility of complications and indications for withdrawal of the drug must always be kept in mind.

Peritonsillar Abscess or Quinsy Sore Throat.—By true peritonsillar abscess or quinsy sore throat is meant the localized collection of pus in the supratonsillar space bounded anteriorly by the upper portion of the anterior pillar, posteriorly by the posterior pillar and inferiorly by the superior pole of the tonsil. Any attempt at therapy is premised on the recognition of the presence of such a collection of pus to the point that surgical drainage is required. During the preliminary period in which an abscess may be forming, incision and drainage are contraindicated and the ideal therapy consists in relief of pain by sedation and by hot saline irrigations within the throat. Once existence of a peritonsillar abscess has been established by the clinical signs such as trismus, a point of maximum induration or suggestive fluctuation above the point of juncture of the anterior and posterior pillars, surgical drainage is indicated. This disease almost exclusively occurs in adults, seldom if ever in children; hence drainage is not only feasible but advisable under local anesthesia. In spite of exquisite local tenderness, it will be found that topical applications to the point of maximum induration of cocaine crystals will produce a satisfactory surface anesthesia. A long-handled Bard Parker knife with a No. 11 sharply angulated blade is then carried directly posterior at a point just above and median to the superior pole of the tonsils and directly through the soft palate tissue. It will be found that this incision produces only a minimum of pain. The knife blade is

carried inward a distance of from 1 to 1.5 cm. and then withdrawn. In nine times out of ten, if the clinical diagnosis has been made correctly and an abscess is present, withdrawal of the knife blade will be followed first by sharp bleeding but then immediately by a thin trickle of yellow pus, indicating contact with the abscess cavity. The blades of a slender, long-handled tonsil hemostat are then introduced through this incised track into the abscess cavity and quickly and vigorously opened. There will be an immediate gush of from 1 to 2 Gm. of pus, which the patient, with his head dependent over a basin, promptly expectorates. This divulsion of the track to the abscess is admittedly painful and I have yet to find any local anesthesia by which it can be avoided. I have tried the suggestion of anesthetizing the sphenopalatine ganglion in the nose but have not found the additional analgesia to compensate for the discomfort of the nasal procedure itself. Thereafter, hot saline irrigations for one or two days following incision will almost always lead to rapid subsidence of inflammation and prompt relief of the patient with only infrequent necessity of separating the wound edges or dealing with any adequate or impeded drainage. Subsequent tonsillectomy, particularly in the face of one or more attacks of peritonsillar abscess, is, I believe, clearly indicated. Failure on attempted incision to reach such a peritonsillar abscess should lead to abandonment of further attempts to probe hither and yon in an effort to find it. Observation and supportive treatment with sedatives and external and internal heat may be followed by a second and more successful attempt, provided the patient has not sought help from other sources.

Acute Pharyngitis.—Acute pharyngitis with congestion and inflammation of the posterior pharyngeal wall, oftentimes with enlargement of the small follicular lymph nodes scattered about on its surface, is a common complaint, particularly by patients who have undergone a previous tonsillectomy. Its present treatment is far from satisfactory, and the number and variety of remedies advocated bear witness to the lack of success of any specific remedy. I have as yet found nothing superior to periodic applications to the entire posterior pharyngeal wall of 3 to 5 per cent silver nitrate applied with a cotton tipped swab. Gargles are useless but I believe that patients frequently derive much comfort from a simple home remedy consisting of an instillation, through the nostrils, of a combination of sodium chloride, sodium perborate and sodium carbonate which, if the head is held in the proper position, will strike against the entire posterior pharyngeal wall and, by its astringent action, afford the patient considerable relief. This position can be satisfactorily assumed only when the patient sits in a chair with the base of his spine well away from the back of the chair and with the head so extended that the medicine dropper is in a perpendicular plane. From a half to three fourths of a medicine dropper of the mixture is instilled every one to three hours until relief is achieved. Hot saline or dextrose irrigations are also of some value, though there is less likelihood that they will touch the region of most acute sensitivity, which is usually behind the soft palate on the upper portion of the posterior pharyngeal wall. External compresses as described for acute tonsillitis are also a valuable adjunct, as is the infra-red lamp. Needless to say, the customary generalized supportive measures should be utilized in this condition.

Retropharyngeal Abscess.—The treatment of acute retropharyngeal abscess is essentially a surgical drainage of the abscess. This can obviously be achieved only if a correct diagnosis has been made, a matter not quite as simple as is often believed to be the case, owing to the fact that the abscess is only infrequently directly visible on simple inspection of the throat. So bizarre are the symptoms of retropharyngeal abscess and so frequently are they due to other unrelated conditions that one must exercise all one's diagnostic acumen in order to establish the existence of this condition. It was formerly the custom to drain such abscesses, almost always in infants and children under 3 years of age, with the patient in the upright position, held in the arms of a nurse, and with the physician palpating the abscess with the left index finger carried into the throat or back of the tongue. The knife held in the right hand was then passed along the left index finger and through the anterior wall of the abscess, the patient being then inverted and the evacuated pus allowed to drain out of the mouth. I believe this method is now outmoded and that such drainage without the aid of direct vision is not only unsatisfactory but at times dangerous. I prefer drainage with the patient in the supine position, the head extended somewhat over the end of the table and held in an assistant's hand with the operator sitting at the patient's head, facing his feet. The tongue is elevated by means of an angulated tongue depressor held in the same manner as one would hold a laryngoscope, with direct illumination of the posterior pharyngeal wall with a headlight or with a head mirror. With the anterior wall of the abscess thus exposed, even if located almost behind the larynx, a long-handled knife can be passed directly through it and into the abscess cavity. The presence of pus is at once manifested by a trickle of yellow fluid from the point of incision, thus permitting slow deflation and aspiration of the cavity with suction without escape of fluid into the lower airways. With final emptying of the major part of the abscess cavity, the long-handled hemostat is used to divulge the edges of the wound in much the same manner as in the case of a peritonsillar abscess. This will usually suffice to maintain ample drainage until the abscess cavity has healed and it is rarely necessary to perform secondary incision or drainage. This procedure is particularly useful when the abscess lies at such a low level that it can scarcely be felt with a palpating finger carried through the mouth and over the back of the tongue. Any surgical procedure carried out under direct vision without the necessity for suddenly inverting the patient and with uncertainty as to whether or not the abscess cavity has actually been opened is certainly preferable in my opinion. In this connection it is important to bear in mind the rare but ever present possibility of secondary hemorrhage in connection with retropharyngeal abscess. Such hemorrhages usually occur through extension of the infection in the region of the abscess to the internal carotid artery, with the formation of a pseudo-aneurysm which, periodically weakening the vessel wall, permits intermittent and massive hemorrhages from the throat. Once such a hemorrhage has occurred with temporary cessation it is the part of wisdom to proceed at once with ligation of at least the common carotid and possibly also of the external carotid artery. Ligation of the common carotid artery alone, readily picked up just behind and internal to the anterior

border of the sternomastoid muscle, may be sufficient to check such hemorrhage although it is still possible for blood, by collateral circulation, to descend by way of the external carotid artery and up the internal. If, after ligation of the common carotid, further bleeding occurs, the external may be ligated in the same manner. Ligation of the common carotid alone has the advantage that some blood is still permitted to reach the brain and in this manner it may be possible to avoid the unpleasant cerebral complications incident to cutting off the circulation by way of the internal carotid artery completely. Statistics clearly show that neglect of such a warning primary hemorrhage incident to a retropharyngeal abscess is fraught with the greatest risk to the patient's life.

CHRONIC INFECTIONS OF THE MESOPHARYNX

1. *Tonsillitis*.—There is still no unanimity of clinical opinion as to exactly what constitutes chronic tonsillitis. A history of previous acute attacks and evidence of surface irregularity with scarification of crypts and with hypertrophic or atrophic changes in the lymphoid structures usually are interpreted as evidence of clinical chronicity. The enlargement of adjacent cervical glands, symptoms of toxic absorption and local signs of irritation and vascular congestion are accessory factors which lead to this diagnosis. Once this state of chronicity is definitely established as far as possible, it does not seem to me that any of the palliative forms of therapy such as the various local applications, suction and vacuum cleaning of the tonsil can have much more than psychologic effect. On this basis tonsillectomy appears to be the logical procedure in all but those cases in which surgery is definitely contraindicated, under either general or local anesthesia, because of other factors in the patient's general condition. Operative technic is clearly beyond the scope of this discussion. Suffice it to say that my own preference is for complete surgical excision rather than for periodic diathermic removal of portions of the tonsil with the obvious disadvantages which attend this form of surgery. Where such evidence of chronic infection is found or thought to be due to the tubercle bacillus, tonsillar removal is all the more logical and necessary. Enlargement, induration and fibrosis of a tonsil accompanied by associated lymphadenitis must always bring to mind the possibility of a syphilitic origin. It is quite obvious that where this diagnosis is substantiated by serologic examination or even by microscopic examination of a small section of tissue removed by biopsy, the treatment is that for generalized syphilis in other parts of the body. Surgery would, in my opinion, be contraindicated.

Chronic Pharyngitis.—Chronic low grade inflammation of the posterior pharyngeal wall, both the lower portion visible anteriorly in the mouth and that higher up behind the soft palate, may be provocative of one of the laryngologist's greatest therapeutic dilemmas. Often there is objectively but little sign of pathologic change and only the insistence of the patient leads to attempts to apply any treatment at all. Enlarged local masses of lymphoid tissue can frequently be removed under local anesthesia with punch forceps or lightly coagulated with the actual cautery or diathermy. Application of various astringents such as silver nitrate or a 1:6 combination of iodine and glycerin if applied often and vigorously enough will sometimes effect a cure. More recently I have in several instances found multiple

small doses of x-rays effective in this condition. I have also had some apparent success with the prescription of an iodine preparation known as lipoiodine, which is taken daily for two or three weeks. Assurance of good bowel elimination, avoidance of cold air in the sleeping room at night, attention to adequate vitamin intake, especially with regard to vitamins A and D, and some consideration of disturbed metabolism requiring thyroid must all be given consideration in chronic pharyngitis. Particularly should an investigation be made of the nose and sinuses lest it be proved later on that a persistent discharge from these, running over the posterior pharyngeal wall, is provoking a constant irritation in this region. Not infrequently the process of atrophic rhinitis may extend to the posterior pharyngeal wall and give rise to the typical dry, glazed crusting on this surface. The present enthusiasm for estrogenic substances in treatment of this condition in the nose is likewise justifiable in the nasopharynx, and topical applications of such drugs as theelin have in my hands been quite successful in improving the general tone and vascularity of the posterior pharyngeal wall.

Foreign Bodies in the Mesopharynx.—The lodgment in the mesopharynx, either at the pharyngeal end of the esophagus in one or the other of the pyriform sinuses or between the epiglottis and the base of the tongue, is a clear indication for the removal of the intruder as the logical therapeutic procedure. Not infrequently this can be managed by means of thorough cocaineization of the entire pharyngeal region with 5 to 10 per cent cocaine, applied I believe most efficaciously with a camel's hair brush, and the utilization of a laryngeal mirror in order to visualize the foreign body. Where the latter consists of a thin sliver of chicken bone or fish bone clearly visible in the mirror, it can frequently be easily removed indirectly by means of a curved grasping forceps which, viewed in the mirror, can grasp the foreign body and effect its removal. If simple measures are not immediately effective, if the foreign body proves in any way to be impacted or removal is likely to result in any laryngeal trauma, such indirect methods should at once be abandoned and preparations made for proper endoscopic removal under direct vision. The technic for such operative measures is, I assume, beyond this present consideration of therapy.

Malignant Disease of the Mesopharynx.—Microscopic biopsy is the only reliable method of accurate diagnosis of malignant disease in the mesopharynx, the tonsil being the commonest structure involved. Its diagnosis having been made, x-ray or radium is the present accepted method of therapy in preference to any attempt at surgical excision.

TREATMENT OF LESIONS OF THE HYPOPHARYNX

Infections.—Acute Laryngitis: The primary and most efficacious form of treatment of simple acute laryngitis is absolute and complete vocal rest. Patients, if possible, should not be permitted even to whisper for at least three to five days. The frequently associated tracheitis is best controlled with an appropriate cough medicine containing such hypnotics as codeine or morphine, by inhalation of steam medicated by compound tincture of benzoin and particularly by the intratracheal instillation of soothing, oily medications such as pinoleum or the more complex monochlorophenol. Such medications can, under guidance of the laryngeal mirror, with fre-

quently necessary preliminary cocaineization, be instilled with a laryngeal syringe directly onto and between the vocal cords during deep inspiration. I believe that this local treatment, carried out daily for two or three days, can be supplemented by the use at home of an infra-red lamp and also by applications applied about the neck of cotton sheet wadding saturated with isotonic salt solution. With evident improvement in the appearance of the vocal cords, the patient may be permitted to whisper for the ensuing week and then gradually resume the use of his voice, being careful, however, for some time to avoid any extra demand or strain on it. Whenever, particularly in children, the element of obstruction is added to the less serious symptom of hoarseness, the picture at once becomes more complicated and the physician must apply therapeutic measures often much more drastic in nature. Of chief importance is the recognition of such obstruction before it becomes so serious as to constitute an emergency. Simple spasmodic croup will yield to the placement of the patient in a warm moist atmosphere, to the use of expectorants, and particularly to reassurance of both the patient and the parents. Diphtheria would of course be suspected in the presence of any diphtheritic membrane elsewhere in the throat, but absence of the latter does not rule out laryngeal diphtheria and with any evidence to suspect contagion antitoxin would wisely be administered.

Persistence of obstruction, however, must always give rise to the suspicion of some more serious underlying cause such as the disease now commonly known as laryngotracheobronchitis. Any suspicion of the existence of this disease or even a simulating condition, such for instance as foreign body in the larynx or true streptococcic laryngitis, would warrant immediate transfer of the patient to a hospital, where direct laryngoscopic examination could at once be carried out. On the observations attending this procedure depends the application of appropriate therapy. In the presence of diphtheria, membranes can be removed by suction or by forceps and an intubation tube placed within the larynx.

An obvious foreign body can be removed in the manner best adapted to its nature and, in the case of laryngotracheobronchitis, a decision can be made after direct examination of the larynx as to the desirability of tracheotomy. In spite of the immediate relief afforded by it, intubation as a general rule is not satisfactory in laryngotracheobronchitis and its employment will only lead to further difficulty later on. The value of sulfanilamide or sulfapyridine has not yet been clearly established in these more severe forms of laryngeal infection. My own experience with sulfapyridine has seemed to indicate its value as a therapeutic adjunct but only in conjunction with complete relief of the laryngeal obstruction and never to be relied on in the presence of severe dyspnea. Of the utmost importance in the care of such patients following tracheotomy is the humidification of the patient's room by some form of mechanical humidifier capable of instituting, in as small a room as possible, a wet and dry bulb thermometer humidity of as near 100 per cent as possible. By this means one may be most nearly assured of preventing the dreaded crust formation in the lower portions of the respiratory tract which has proved such a serious factor in the care of patients afflicted with laryngotracheobronchitis.

Chronic Laryngitis: Chronic laryngitis, incident usually to long-standing abuse of the voice, is to be

treated on somewhat the same line as acute laryngitis but over a longer period of time and with some regard for the necessity of the patient's carrying on to some extent his normal activity. He should, if possible, be put on a whispering regimen for anywhere from one to three months. Local instillations into the larynx of soothing medications by means of the laryngeal syringe have already been described. Avoidance of laryngeal irritation incident to smoking, to the use of alcohol and to dusty and irritating atmospheres is important. If the original disability is the result of improper use of the voice, particularly in speakers and singers, educational factors must enter the picture and the patient, if possible, taught proper use of his voice. Underlying and predisposing causes which may arise in other parts of the body system must be given attention, particularly the nose and nasal sinuses, as being a primary cause of secondary chronic laryngeal irritation. Obviously no patient can safely be assumed to have simple chronic laryngitis unless other simulating conditions in the larynx have been ruled out by careful and reliable laryngoscopic examination. Where such examination shows the presence of pus and accumulated dry secretions, consideration must be given to the similarity of this condition with that of atrophic pharyngitis and rhinitis and to the utilization by swabbing in the larynx of one of the various estrogenic substances which have proved so effective in other parts of the respiratory tract.

Laryngeal Tuberculosis: This disease represents an instance of the importance of accurate laryngologic examination with the laryngeal mirror as being the only means by which differentiation can be made in many chronic laryngeal lesions producing hoarseness as almost the only symptom. There is no typical laryngeal picture for tuberculosis and only experience will lead gradually to ability to make a correct estimate of the laryngeal picture. An antituberculosis regimen is obviously essential, since in almost every instance of laryngeal tuberculosis the patient will be found to be suffering also from pulmonary tuberculosis. Locally my preference is for puncture cauterization of the tuberculous lesions in the larynx performed by means of direct laryngoscopy. Marked dysphagia may be relieved by injection or section of the superior laryngeal nerve.

The same importance of accurate diagnosis also obtains in the case of hoarseness due to syphilitic lesions of the larynx. The clinical appearances may be still more bizarre even than those of tuberculosis and there is no diagnostic pattern on which one can definitely rely. Serologic tests will of course lend credence to this diagnosis, the treatment being that of syphilis of other parts of the body.

Tumors of the Hypopharynx.—The treatment of tumors, either benign or malignant, in the hypopharynx, particularly in the larynx, depends to a considerable extent on the nature of the new growth. Many times simple surgical excision will suffice whereas in other instances, particularly in advanced malignant disease, the most radical forms of surgery or intensive irradiation may be appropriate. Such work is now falling more and more into the hands of those who take a special interest in this subject and who by extensive experience have developed a special skill for such work. For the average laryngologist it is of especial importance that by early and frequent indirect laryngoscopic examination he be alert to detect the presence of any incipient new growth before it advances to the stage requiring

radical treatment. This is of particular importance in the case of cancer of the larynx, in which early diagnosis is so important from the standpoint of the patient's future well-being. Suspicion of a new growth in the larynx will frequently warrant substantiation by biopsy carried out by means of direct laryngoscopy, on the results of which will depend the character of subsequent surgical treatment.

Foreign Bodies in the Hypopharynx.—Foreign bodies in the pharyngeal end of the esophagus are usually not visible on direct inspection. Much will depend on the history given by the patient, since this will often reveal the nature of the foreign body. From a therapeutic standpoint removal is, of course, indicated, usually by the direct esophagoscopic method. The same is true of foreign bodies in the larynx, but, since these so frequently occur in children and since there is often no direct history of aspiration, the true nature of the obstruction may not at once be evident and for this reason inappropriate therapy, such as the administration of diphtheria antitoxin, may erroneously be applied. The importance of relief of such laryngeal obstruction pending removal of the foreign body has already been stressed in connection with inflammatory laryngeal obstruction.

Throat inflammations complicating systemic disease must frequently come under observation, particularly of the general practitioner. Prominent among these is the sore throat incidental to scarlet fever and that seen in mononucleosis and agranulocytic angina. The blood picture is most important in diagnosis and the treatment is that of the underlying condition.

Laryngeal Paralysis: The treatment of hoarseness due to various forms of laryngeal paralysis depends entirely on the etiologic factor. Trauma to the recurrent laryngeal nerve or compression of this nerve by pathologic conditions within the thorax must be treated entirely from the etiologic standpoint. Where such paralysis entail severe obstruction to breathing, tracheotomy may be the only feasible method of at least temporary relief.

Central nervous system disease producing such paralysis often entails many diagnostic difficulties before intelligent treatment can be applied. Weakness of the approximating laryngeal muscles and certain forms of hysteria producing weakness or fatigue of the voice must frequently be treated from a psychologic standpoint and by instruction in proper use of the voice. Almost all therapy is dependent first of all on careful and intelligent mirror examination of the larynx.

319 Longwood Avenue.

Heat Stroke and Heat Prostration.—Occasionally in periods of extreme heat and humidity great numbers of people may be prostrated, as though the affection were epidemic. The mildest effect (heat prostration) consists in headache, moderate rise in temperature, pains in back and limbs, and extreme exhaustion. More severe is the asphyctic form, in which great dyspnea and cyanosis, with delirium or unconsciousness, are added to these symptoms. Still more severe, and very frequently fatal, is the hyperpyretic type, in which unconsciousness and collapse come on suddenly, or after several days of vague premonitory symptoms. There are convulsions, delirium, or profound coma, with shallow and grasping or very deep respiration, and finally failure and stoppage of the heart. The skin, at first covered with sweat, becomes hot and dry, and the temperature rises to phenomenal levels.—MacCallum, W. G.: *A Textbook of Pathology*, Philadelphia, W. B. Saunders Company, 1940.

TREATMENT OF ACUTE AND CHRONIC SUPPURATIVE OTITIS MEDIA

HAROLD I. LILLIE, M.D.

ROCHESTER, MINN.

Not so long ago some one asked "What is wrong with present day methods of treating otitis media?" The question startled me. Complacent in the thought that patients seemed to be doing well under the management being used, I wondered if the question really meant "Why can we not control the complications of otitis media?" It must immediately be realized that, once an infection has occurred within the middle ear, it can be assumed that the infection has extended to the appendages, because of the very nature of the anatomic arrangement of the structures. The only portion of the tract that can be treated directly is the middle ear. Assuming that the diagnosis of acute otitis is made correctly, what should be done?

First of all, the serious nature of the disease must not be minimized. The patient should be hospitalized and confined to bed in a nearly upright position. The room should be warm and moist. Appropriate treatment of any respiratory infection should be instituted and it must be insisted on that the patient not blow the nose. Hot moist dressings applied over the ear and mastoid are effective in ameliorating symptoms. Roentgenologic treatment of the ear in the early stages of the condition has been found to afford considerable relief of pain for many patients.

There seems to be no unanimity of opinion regarding the indications for and usage of myringotomy in suppurative otitis media. Some observers say they perform myringotomy on all patients at the first sign of involvement in the middle ear. Others use myringotomy when severe pain is complained of, even though no bulging of the drum is present. Others prefer to await the presence of classic signs such as (1) fever, (2) severe pain, (3) redness and (4) bulging. That the composite condition must be individualized and appropriate treatment used is the consensus. If the first signs in the ear are those referable to tubotympanitis, institution of palliative measures certainly seems logical, whereas, if all signs are present, myringotomy is indicated. If the surgeon is undecided, he may use myringotomy without reflection on his diagnostic ability or judgment. If myringotomy is deferred, any of the standard medicaments may be used in the ear. In addition to the effect it has on the pain, the use of a medicament helps partially to sterilize the canal. During this period other necessary examinations may be carried out. If myringotomy is decided on as a primary method of treatment, the operation is best performed under general anesthesia. An adequate incision of the tympanic membrane, and not merely a puncture wound, should be insisted on. The posterior quadrant of the tympanic membrane is the most suitable site for myringotomy. It is too much to expect that myringotomy will prevent surgical mastoiditis in every instance, and relatives of the patient should be so informed. Myringotomy may help, but the underlying pathologic processes may not be confined to the middle ear and conditions may not be suitable for drainage of the adjacent infected structures. Myringotomy may be expected to relieve the intense pain

From the Section on Otolaryngology and Rhinology, the Mayo Clinic. Read before the Section on Laryngology, Otology and Rhinology at the Ninety-First Annual Session of the American Medical Association, New York, June 13, 1940.

caused by the effects of pressure of fluid confined in the middle ear; also it may be noticed in children that elevated temperatures may subside after performance of myringotomy. It is important that cultures of the discharge from the middle ear be taken and the infecting organism be identified, because this knowledge may be of great importance in the management of the disease. However, the importance of the organism found may easily be overemphasized.

It is my opinion that it is best not to resort to irrigations of the auditory canal if the discharge from the ear is free. Irrigation of the auditory canal should not be done until the discharge becomes thick and purulent. Hot moist compresses should be kept applied over the ear and the mastoid process because their use seems to encourage free discharge.

Careful observation of body temperature, pulse and respiration and the use of laboratory tests are essential because the progress of the patient may best be followed if these observations are correlated. I have always felt that the general appearance and demeanor of the patient are good indexes of the general condition. Blood tests are particularly important, especially the estimation of the hemoglobin percentage and culture of the blood. Tests made daily are not necessary. Small children are unduly antagonized and made more difficult to manage and are less cooperative if tests are made daily.

The use of sulfanilamide is rather general at present, and the literature is filled with strikingly successful instances of its use. On the other hand, it is equally true that warnings are being sounded by very competent observers to the effect that the use of the drug may seriously mask the signs and symptoms of actual underlying pathologic processes. Patients receiving this drug must be hospitalized to insure adequate observation. Recognition of a new clinical picture may need to be learned if the use of sulfanilamide is insisted on. It seems to have been well established that the drug and its derivatives have little beneficial effect in actual infections of the bone but that they are effective against infections involving the soft tissues. If infection of the blood stream or extension of the infection into the intracranial structures is present, the original infection in the ear and mastoid cells must be eliminated and sulfanilamide or its derivatives should be used as an adjunct therapeutic agent.

It must be decided on which type of mastoiditis is present. If osteothrombotic mastoiditis is present, the discharge from the ear will be thin and the roentgenogram usually will show a small cell variety of mastoid process with little or no changes suggestive of destruction. Earlier evidence of complications as manifested by high fever, nephritis and a decreasing percentage of the hemoglobin may be expected. Evidence of invasion of the blood stream may occur in this type of disease even after the discharge from the ear has ceased.

If the pathologic process is suppurative, the discharge from the ear will be purulent and the roentgenogram will show evidence of destruction of the cellular structures. The blood count more generally shows an increase in the number of leukocytes, and the decrease in the percentage of the hemoglobin is not so striking. Complications, because of the very nature of the disease, occur later in the course.

When has resolution taken place? Many factors must be considered. The general appearance and demeanor of the patient are good indexes. If the patient continues to look and act as if he were ill, even though the ear appears to be doing well, the physician should be sus-

picious of impending complications. If the patient looks and acts as if he were normal, even though the ear is still discharging, it is rather good evidence that no complication is impending. There is no set period for final resolution to be established. Every patient seems to constitute a law unto himself. Also there is not a set time at which surgical intervention is indicated; it depends entirely on the nature of the pathologic process and the good judgment of the surgeon. The patient should be observed throughout the course of the disease if chronic suppurative otitis is to be avoided.

Too often for accurate comprehension, chronic otitis media is dealt with in the abstract. To speak in generalities about a disease of such variable clinical characteristics as chronic otitis media is too confusing. Dividing chronic otitis media, for purposes of discussion, into nondangerous and dangerous groups is not sufficient for clearness of immediate perception of the actual pathologic process under discussion. Because clinicians must correlate all the facts in a given case to arrive at some worth-while conclusion, it is important to realize that clinical problems cannot be reduced to the status of mathematical precision. To rely on statistics is a dangerous philosophy in the everyday practice of medicine. One famous aural surgeon said that all ears in which a chronic condition is present should be operated on. That rather obviously is a philosophy which cannot be subscribed to by experienced observers; it is as wrong as it would be to say that there is no need to operate in any case of chronic otitis media. Recently I heard an otologist say that he had never failed to cure what he called a "chronic ear" with a certain combination of drugs in solution. When he was asked what types of "chronic ear" he meant, he said that all types had responded to the treatment. It is such statements as this one that make for confusion.

In general, it can be said that the treatment of chronic suppurative otitis media should be carried out by an otologist. The frequency of treatment is entirely dependent on the nature of the disease. Treatment must be persistent, well directed and meticulous. To wash out the discharge with aqueous solutions is not good treatment because the effect of water is to soften epithelium and cause increased desquamation in addition to producing a very suitable condition for the growth of bacteria. For these reasons the use of alcoholic solutions is preferable. Manipulation with instruments may be necessary to remove collections of desquamated material, aural polyps causing obstruction to underlying cavities or recesses, and to remove exuberant granulation tissue. At the first visit of the patient it may not be possible for the otologist to do all he would like to do because the patient may be too apprehensive. As confidence is gained, more can be accomplished. From an economic standpoint, persistence in local treatment may be favorable from the patient's point of view. If the treatment is not entirely successful and if surgical intervention is decided on, it will be found that the local treatment has prepared the field well and that the period of postoperative treatment will be much less prolonged for that reason. Treatment at home under the direction of the otologist is not effective until the pathologic process has been brought well under control.

FOUR CLINICAL TYPES OF CHRONIC SUPPURATIVE OTITIS

Patients affected with chronic suppurative otitis media may be divided clinically into four groups. For purposes of discussion the following grouping will afford

a rather clearly defined mental picture of a given case so that any otologist should know at once what pathologic condition actually is being discussed. The clinical management of patients in each group is based on the recognition of the underlying pathologic process. Time does not permit a comprehensive exposition of all the factors involved.

GROUP 1.—Patients comprising this group include those in whom antero-inferior perforations of the tympanic membrane overlie the orifice of the eustachian tube. Few subjective symptoms are complained of other than discharge from the ear. The discharge usually is increased in the presence of head colds. The discharge is mucopurulent in character and is without odor unless care of the ear has been neglected and unless the detritus has undergone saprophytic infection. The treatment is directed at the nasopharynx, eustachian tube and middle ear. The patient's blowing of his nose should be stopped, or else he should be instructed in the proper physiologic method of blowing the nose.

GROUP 2.—Included in this group are those patients who may have had considerable central loss of the tympanic membrane and show evidence of definite pathologic change in the membrane covering the promontory. Hyperplasia and granulation tissue are frequently encountered. In addition, the malleus may be involved by a necrotic process. However, there is little evidence of pathologic changes in the attic. When the infection is controlled, the promontory becomes covered with epithelium if the periosteum has not been too seriously damaged by disease. Patients who have this condition respond well to local treatment. Alcoholic solutions to which certain antiseptic agents are added and antiseptic powders are the usual agents employed. Drying with a stream of air is used. Zinc ionization is said to be useful in this particular type of condition.

GROUP 3.—No destruction in the tympanic membrane may be evident in this group of patients but defects into the attic of various sizes and situation are seen. However, partial or total destruction of the tympanic membrane may be present in addition to the lesion in the attic. In many instances the tense portion of the tympanic membrane may be intact. Since the perforation present is of the marginal type, formation of cholesteatoma can be expected. In addition, the occurrence of necrosis of bone is not unusual. From the defect in the attic, foul smelling pus may be discharged and visible evidence of cholesteatoma is likely to be present. Subjective symptoms, in addition to the malodorous discharge, such as pain or headache and mild attacks of vertigo, may be complained of by the patient. The hearing may be but slightly affected. The condition of patients in this group can be considered to be "borderline surgical." The effect of treatment will depend on the size of the defect into the attic and mastoid region. If the defect is large enough to permit instrumentation and direct treatment, the result may be very satisfactory and, if there are no symptoms of impending complication, treatment may be persisted in. A surprising number of patients in this group have remained well. If surgical intervention becomes necessary, the modified radical mastoid operation can be employed satisfactorily in those cases in which the tympanic membrane has not been destroyed by the disease. It is in this group that natural reparative processes may fashion a cavity similar to that for which the surgeon would hope if he had performed an adequate operation.

GROUP 4.—In addition to the pathologic processes discussed in group 3, those patients whose condition classifies them in group 4 present definite evidence of serious pathologic changes with or without symptoms or impending serious complication. The condition of such patients is surgical and demands adequate surgical intervention at the earliest convenience because there is little likelihood that treatment will affect favorably the condition and, what is more important, delay in instituting surgical intervention is fraught with great danger to the life of the patient.

THE TREATMENT OF ACUTE AND CHRONIC SINUSITIS

J. MACKENZIE BROWN, M.D.

LOS ANGELES

The treatment of sinusitis cannot be prescribed in hard and fast rules. Individualism in therapy is as essential here as in any other branch of medicine. The following general rules are given but may be adjusted to the individual needs of the patient:

THE GENERAL TREATMENT OF ACUTE PANSINUSITIS

In acute pansinusitis the patient should be kept in bed in a room with a warm even temperature day and night. Nasal shrinkage should be accomplished with either ephedrine or neosynephrine in warm physiologic solution of sodium chloride. The spray should be repeated in from ten to fifteen minutes in order to reach the superior nasal regions. In fulminating cases with threatening orbital complications, cocaine or epinephrine may have to be used. Even though the secondary reaction from the use of these drugs may be marked, the added shrinkage obtained may cause the offending sinus to evacuate itself and prevent complications.

In small children it is preferable to use the dropper method. The child is placed in the recumbent position, the head fully extended over the edge of the bed, and about three drops of the solution put into the nose. This should be repeated in from ten to fifteen minutes.

Relief of pain in the acute stage is obtained by the use of drugs and physical measures. Acetylsalicylic acid and codeine should be given as often as necessary. Heat or cold may be used in the form of local applications, according to individual preference. Heat may be utilized in any one of many ways. I am convinced, however, that it is the heat alone that gives relief, and not the method through which it is used.

In severe infections, chemotherapy and immunotherapy may be indicated. In beta-streptococcal sinusitis, sulfanilamide is advised. In pneumococcal sinusitis, sulfapyridine, and in staphylococcal sinusitis, the newer derivative sulfathiazole has been of value experimentally. In cases of streptococcal sinusitis in which sulfanilamide is not well tolerated or ineffective, convalescent scarlet fever serum may be used with great benefit.

In the subacute phase of pansinusitis, when the patient is afebrile and usually free from pain, after thorough nasal shrinkage the nose is gently irrigated with warm Ringer's solution to remove accumulated mucus, or a displacement treatment (Proetz) is done. I have found these to be important measures in ridding the patient of the infection. In this stage a warm climate

From the Department of Otolaryngology, the University of Southern California School of Medicine.
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is of great value. It is important, however, that these patients keep their rooms warm at night, since the temperature may frequently drop from a high level in the day to a low one at night.

ACUTE MAXILLARY SINUSITIS

In the acute stage of maxillary sinusitis, irrigation of the antrum is contraindicated. The lining membrane of the antrum is hyperemic and markedly edematous; therefore no benefit is accomplished by irrigation, and harm may result.

In the subacute stage, when exudation is the prominent pathologic process, the antrum usually contains a considerable quantity of thick pus. If the retention of this pus produces persistent pain and discomfort, in spite of shrinkage, irrigation of the antrum is indicated. The antrum may be irrigated through either the inferior or the middle meatus. The choice of route will depend on the practice and preference of the individual surgeon as well as on the anatomy of the nose. Such an irrigation will remove a large amount of thick pus, which would find exit only with great difficulty or not at all through the natural opening, if untreated.

ACUTE MAXILLARY SINUSITIS DUE TO DENTAL PATHOLOGIC CONDITIONS

Cases of acute maxillary sinusitis due to dental pathologic conditions are definitely not secondary to any nasal infection and are confined to the antrum alone.

Without Extraction.—Acute maxillary sinusitis due to dental infection not following extraction is uncommon. The very earliest stage is a short inflammatory phase. The next stage, that of exudation, is the one commonly seen when symptoms first appear. As soon as the diagnosis is established, the antrum should be irrigated. At a later date, when the acute process has subsided, the offending dental pathologic condition should be removed. After this the irrigations should be continued until the infection subsides.

Following Dental Extraction.—If an opening exists between the antrum and the tooth socket, the antrum is irrigated through this opening as soon as the sinusitis is recognized. If no opening exists between the tooth socket and the antrum, irrigation should be done through the nose.

ACUTE ETHMOIDITIS

Acute ethmoiditis is most frequently associated with infection of the other sinuses and will usually respond to the general treatment outlined. If orbital extension occurs, three types may be observed: first, simple edema of the orbit; second, periorbital abscess, and third, the less common, true orbital abscess.

Simple orbital edema will usually respond to intensive nasal shrinkage. If orbital induration with fixation of the eyeball is present, it is an indication for surgical intervention. An external approach is advised and should endeavor only to allow adequate drainage but should not include a complete exenteration of the ethmoid cells. If the latter procedure is necessary, it should be done at a later date, after the subsidence of the acute process.

ACUTE SPHENOIDITIS

During the acute stage of sphenoiditis only general treatment should be carried out.

In the subacute stage, after recession of nasal congestion, the sphenoid sinus may be irrigated through the ostium. In children the persistence of an unexplained fever following an acute sinusitis should suggest the possibility of a sphenoiditis.

ACUTE FRONTAL SINUSITIS

Acute frontal sinusitis should be treated first by intensive shrinkage. If ephedrine or neosynephrine does not suffice, epinephrine and cocaine should be used. They may be employed in the form of pledgets placed in the middle meatus. Even though epinephrine has a very marked reaction from one to two hours after its use, the immediate shrinkage obtained may be sufficient to initiate drainage of the sinus.

Early external drainage of the frontal sinus should be considered if, in spite of intensive shrinkage, persistent pain and tenderness with or without swelling of the upper lid or supra-orbital region is present. If the sinusitis is the result of swimming, external drainage should be considered earlier than otherwise. The external drainage should be confined to a simple trephine in the inner third of the floor of the sinus.

It is imperative that an x-ray examination of the frontal sinus should be made in order to determine the presence and dimensions of the sinus before surgery. With the external opening a more adequate drainage is obtained without the dangers of traumatizing the acutely inflamed nasal mucosa. If meningeal signs become apparent, the posterior plate should be removed at once, or if signs of osteomyelitis make their appearance, in spite of adequate external drainage, more extensive surgical procedures on the frontal bone should be employed without delay.

PRINCIPLES OF TREATMENT OF CHRONIC SINUSITIS

In chronic sinusitis a general physical examination of the patient is of the utmost importance as well as the routine special examinations, including adequate radiography. Factors of importance include endocrine dyscrasia, excessive use of tobacco and alcohol, and vitamin and other dietary deficiencies.

It should be kept in mind that certain cases of chronic sinusitis are basically of an allergic nature with superimposed pyogenic infection. Unnecessary surgery may be avoided by investigation of this angle.

If septal deflections are present which may obstruct sinus drainage, these should be corrected. Infected tonsils and adenoids should be removed, in order to prevent upper respiratory infections and recurrent sinusitis. In children it is not uncommon for an acute exacerbation of a chronic sinusitis to follow tonsillectomy. The removal of tonsils and adenoids in children is frequently all that is necessary to clear the sinus infection.

CHRONIC MAXILLARY SINUSITIS

In chronic maxillary sinusitis, displacement treatments may be tried but irrigation of the antrum is suggested. If the infection persists after a reasonable trial with irrigations, an antrum window is indicated. In making the antrum window I would suggest that the opening be made far forward and low on the floor and not too far back, and that it be done with biting forceps or sharp instruments in order that the edges of the opening may not be unduly traumatized. There is less probability of excessive granulation if biting forceps are used instead of rasps. If the opening is made too far back, there is danger of hemorrhage from a branch of the sphenopalatine artery. If the opening is made too far back and high up, the attachment of the inferior turbinate is weakened with a subsequent in-drawing of the turbinate. The formation of adhesions follows with the ultimate closure of the window.

Complications associated with suppurative mastoiditis when pneumatization is extensive which results in bone perforation with the extension of infection into neighboring soft tissues are as a rule observed to better advantage on clinical inspection than by means of roentgen examination. Such perforations are to be looked for in the zygomatic region, in the area immediately posterior to the ear and in the form of Bezold's abscess. Occasionally cortical destruction of the mastoid can be identified radiographically, although ordinarily necrosis of cell walls in the immediate vicinity rather than the actual perforation itself is all that one can find. Perisinal abscess, when sufficiently extensive, may be detected on the basis of neighboring bone destruction along the course of the sigmoid sinus.

The serious complication of petrositis has attracted a good deal of attention by otologists and roentgenologists in recent years. Many articles devoted to the discussion of normal relationships and observed developmental variations of the petrous portion of the temporal bone, as well as roentgen evidences of disease, have appeared in the literature. Roentgen examination is usually requested for the purpose of confirming suspicions based on clinical signs with the hope that perhaps some idea of the extent of the process may be gained.

By general usage, petrositis has come to mean inflammatory disease involving that part of the petrous bone which lies medial and anterior to the arcuate eminence and the superior semicircular canal. This portion of the temporal bone consists of cancellous or spongy bone containing marrow and a variable number of air containing cells. The spongy portion of the bone is encased by a dense cortical layer. The occurrence of air cells within the petrous bone has been variously quoted at from 11 to 35 per cent of all observed cases. Fowler and Swenson³ were able to identify at least a few cells in the petrous bones of all of 369 adult patients whom they studied. In only twelve of these would they report extensive pneumatization. In poorly pneumatized bones some cells were found in the peritubal area, above the jugular bulb and in the epitympanum. Cellularity of the petrous process is usually proportionate to the number of cells found in the mastoid process. Roentgen signs of suppurative disease involving cells within the petrous portion of the temporal bone do not vary from those which are useful in estimating the status of the mastoid process, although signs of clouding and cell wall destruction are as a rule recognized with greater difficulty. The belief is generally accepted that dissemination of mastoid disease in the petrous bone is directly dependent on cellularity in this area. Once extension has occurred, however, true osteomyelitis may develop in the marrow-containing portion of the petrous pyramid. Under these circumstances bone destruction may extend well beyond the site of recognizable cells if the infection is severe. In more indolent infections, sclerosis may develop far into the body of the petrous bone. Roentgen signs of petrositis can be considered of value only when they confirm clinical manifestations of such disease or when they are helpful in determining the most desirable method of surgical treatment.

Brain abscess complicating suppurative mastoiditis may exist in the absence of telltale roentgen signs. Occasionally displacement of calcification within the choroid plexus and pineal body has proved helpful in

detecting the presence of intracranial mass to one or the other side of the midline. At least one instance of a brain abscess containing gas produced by the infecting organism and directly associated with mastoid disease has been reported. In this case the presence of the air bubble resulted in localization following x-ray examination. Once localized, the surgical treatment of brain abscess can be facilitated by the injection of opaque contrast mediums directly into the cavity by way of an exploring needle. After such injection roentgen examination offers valuable information regarding the size and exact location of the abscess. Kahn⁴ has reported the progressive extrusion of abscesses so injected toward a well placed decompression defect in the skull.

The complication of cranial osteomyelitis is only rarely associated with mastoid disease. In the few instances which have been encountered at the University Hospital the situation was not recognized in preoperative roentgenograms. In one case, however, unequivocal signs of osteomyelitis were demonstrable, progressing beyond the margins of the operative defect following operation.

Primary tumors of this region are extremely rare. Carcinoma associated with chronic middle ear disease has been described. The roentgen signs of this lesion with extension to the mastoid are not characteristic. The degree of bone destruction may be more marked and localized than is to be expected from suppurative disease. At our hospital in recent months extensive cranial destruction in the region of the temporal bone of a young child was found at operation to represent a large lymphosarcoma. It is well to remember that Schüller-Christian's disease may produce extensive mastoid destruction in infants. In this disease multiple lesions throughout the skull and elsewhere in the skeleton may be depended on to reveal the true nature of the situation.

CONCLUSIONS

Complications of suppurative mastoiditis other than those here discussed may from time to time be encountered. One may expect with confidence to recognize such extenuating circumstances when they do occur only if routine roentgen examination is conducted with great care and precision. In this particular field of roentgen diagnosis, accurate technic and sound dispassionate judgment are of paramount importance if unusual circumstances are to be recognized and evaluated.

University Hospital.

ABSTRACT OF DISCUSSION

DR. ISIDORE FRIESNER, New York: Dr. Johnson's paper represents the present evidence of accord between the roentgenologist and the clinician as to the method of roentgenology and the value of roentgenograms in the diagnosis of disease in the temporal bone.

DR. FREDERICK M. LAW, New York: I have to speak from the standpoint of a roentgenologist. I agree with everything which has been said. I have two observations which I should like to make. Sulfanilamide is a valuable drug but a treacherous friend. When it is administered, the case must be followed by a series of x-ray films in order to obtain a knowledge of what is taking place within the mastoid process. When given early, before any involvement of the bone occurs, the prognosis is good; but if administered after beginning bone change, the symptoms are relieved, the patient feels fine, but the drug has no effect on the bone other than a delayed action of the process.

3. Fowler, E. P., Jr., and Swenson, P. C.: Petrositis: A Roentgenological and Pathological Correlation, *Am. J. Roentgenol.* 41: 317-342 (March) 1939.

4. Kahn, E. A.: The Treatment of Encapsulated Brain Abscess with Visualization by Colloidal Thorium Dioxide, *Univ. Hosp. Bull., Ann Arbor* 4: 17-19, 1938.

When the drug is discontinued the bone destruction proceeds, just as though no drug has been administered, and it is absolutely necessary to use follow-up films, which should be stereoscopic, as stressed by Dr. Johnson. I have had reports that operation following the administration of sulfanilamide showed complete destruction of the bony walls, whereas the x-ray examination showed cell structure present. The reason for that is, films were not made stereoscopically to obtain the third dimension, and the apparent cell structure shown on a single film is caused by a layer of complete and incomplete cells immediately under the cortex. Visualization in the third dimension would have shown that the deeper cells were destroyed. I feel that one must have absolute faith in the films in order to know the progress of the case. We know that resolution occurs in the presence of bone necrosis, but it is safer to be aware of the condition than to feel comfortable in the absence of all symptoms. The other condition I should like to speak of is petrositis. Marked involvement of the petrous bone can be shown on a roentgenogram but I should like to add a word of caution against interpretation with only a single set of films. One should be made at the beginning of mastoiditis in order to have a comparison for future trouble. The petrous bone is just as susceptible to anatomic variations as any other bone of the skull, and I have seen variations in the structure simulating petrositis with absorption of the petrous bone. Films taken for a regular sinus involvement will many times show an anatomic variation which must be considered in analyzing the appearance in the presence of positive symptoms.

VULVAR FUSION

ITS UROGYNECOLOGIC INTEREST

MEREDITH F. CAMPBELL, M.D.

Professor of Urology, New York University College of Medicine
NEW YORK

Fused vulva (*synechia vulvae*) designates the condition characterized by an embryonal midline sealing together of the labia minora; usually a minute unfused area is left well forward, and through this orifice the child urinates. The foregoing represents the incomplete variety of fusion which in statistical studies occurs in approximately a third of the cases; in complete fusion the vulvar union is total. Although I could find nothing in American medical literature of the past twenty-five years appertaining to this subject, surely this does not represent the true incidence of the condition. Yet the appearance of the anomaly is so striking that its correct recognition could scarcely fail to provoke at least a few case reports. Curiously, in none of the nine cases of this condition which I have seen during recent years was the anomaly recognized until some time after birth. All the cases that I have seen were thought by their original observers to be instances of hermaphroditism or pseudohermaphroditism. All the patients except one (8 years) were less than 2 years old; the youngest was 4 months.

ETIOLOGY

This condition may be either congenital or acquired. In the acquired type, it has been thought by some that intra-uterine inflammation causes a sealing together of the labia minora or of the vaginal orifice. Other hypotheses include post partum vaginal inflammation; the sealing together results from cohesion of the inflamed tissues.¹ The explanation which seems most rational is that of an embryologic midline fusion of the labioscrotal folds on each side similar to that which the two scrotal folds undergo in the male, but the fusion usually lacks

the density of scrotal fusion. This scrotal union occurs between the third and fourth months of fetal life. Although I have not found this theory recorded in the literature of the subject, I question that it is original with me.

Acquired vulvar fusion is said to follow local inflammation consequent to acute infectious diseases such as cholera, smallpox, diphtheria, scarlet fever, pneumonia, typhoid and typhus.² Yet I can find no description of an authentic case of this variety. In view of this, one may consider the condition predominantly a congenital anomaly.

REPORT OF CASE

The following case history of the first and oldest child in this series suggests the usual clinical problems these patients present. Diagnostic error and therapeutic delay may entail both preventable suffering of the child and much needless anxiety of the parents.

T. S., a girl aged 8 years, was admitted to the Children's Medical Division of Bellevue Hospital July 21, 1930, because of recurrent attacks of "pyelitis" for the past nine months. With these attacks there had been low grade fever and backache. Examination of the voided urine specimens repeatedly showed many pus cells, and on this observation the diagnosis of pyelitis rested. Labial examination on admission to the hospital (an attempt to obtain a catheterized urine specimen had been made) revealed an unusual labial formation. A gynecologic consultation was requested and the examination was made by an excellent gynecologist who noted that the abdomen was normal. The vagina, labia minora and majora, clitoris and a supposed urethral opening were present. The vaginal introitus was completely occluded by thick fibrous tissue. Rectal examination did not disclose the presence of any uterine body or adnexa; the patient was partially resistant to examination. A diagnosis was made of congenital malformation of the generative tract with absence of vagina, uterus and adnexa. It was suggested that the mother be advised of the condition and that the patient return for reexamination at about the age of puberty.

One week later the child was referred to the department of urology for cystoscopic observation, but this was not accomplished because of my inability to locate the external urethral meatus through the minute opening in the fused labia minora. Three days later, with a finger in the rectum as a guide, a probe was introduced 2 inches upward into the cervical area. The appearance of the fused labia will be described later. I noted at the time that the vagina and uterus were present and that it seemed that the vaginal canal would be exposed by incisional separation of the "perineal" mucosa in the midline. The following day (August 8) the patient was seen by an eminent gynecologist, who noted the opinion that the patient probably had a congenital anomaly, perhaps the absence of generative organs, and that as she defecated and urinated normally there was no indication for operative intervention until the age of puberty. The latter note dismissed the child from gynecologic consideration for one year. One month after the note was made an excretory urographic series (with neo-iopax) disclosed a morphologically normal urinary tract.

One year later (Sept. 15, 1931) the child was returned to me, at which time I took it on myself to correct the anomaly. The fusion of the labia minora was gently broken down without discomfort, revealing a normal hymen, vagina and urethra. Vaginal endoscopy disclosed a normal appearing cervix. Petrolatum dressing and special cleanliness were employed for one week. In June 1933 the urine was normal, including bacteriologic culture. There were no complaints. At the age of 16 years (1937) the child still had no complaints and was developing normally in every respect.

PATHOLOGIC AND CLINICAL CONSIDERATIONS

The appearance of the fused labia minora is striking and is likely to be extremely confusing to one who never before has seen it. The interlabial (majora)

From the Department of Urology, New York University College of Medicine.

1. Vakar, N. A.: Vulvar Adhesions in Young Children, *Pediatry* 14: 477, 1930. Sconrino, A.: Congenital Adhesions of Labia Minora, *Clin. Obst.* 30: 645 (Sept.) 1928. Ochsenius.²

2. Ochsenius, K.: Interlabial Occlusion of Vulva in Children and Its Treatment, *Deutsche med. Wchnschr.* 53: 838 (May 13) 1927.

ulcerative colitis in three Frei positive patients and attributed the colitis to lymphogranuloma venereum. Paulson¹¹ prepared antigens from the colonic exudates of patients with chronic ulcerative colitis with and without positive Frei reactions and obtained positive cutaneous tests in cases of lymphogranuloma venereum and negative tests with healthy persons or patients suffering from other conditions. Dick⁸ and Goodman,⁹ however, failed to obtain satisfactory Frei antigen from the pus aspirated from the perirectal abscesses in a case of inflammatory rectal stricture with a positive Frei test or from ulcerated areas of the colon at autopsy in a case of chronic ulcerative colitis with a positive Frei reaction.

Since a large number of patients with nonspecific ulcerative colitis were available, we decided to pursue the study of this question. All such patients were studied with regard to the Frei reaction and the neutralizing powers of their serums against the virus of lymphogranuloma venereum. Attempts also were made to isolate the virus from the tissues of selected cases.

FREI TESTS

In the performance of the Frei test we used a mouse brain antigen prepared according to the usual technic from a strain of the virus of lymphogranuloma venereum isolated by us from pus aspirated from the enlarged inguinal node of a patient in the third week of the infection. This strain has gone through forty-six consecutive mouse passages to date and has yielded consistently effective antigen. Control antigen was similarly prepared from normal mouse brain.

Patients received 0.1 cc. of antigen intradermally in the flexor surface of the left arm and the same quantity of the control in the right. Readings were made in two and three days. If the result was doubtful, patients were asked to make return visits for further observation. A reaction 7 mm. or more in diameter was considered positive. In the occasional patient giving a positive reaction to normal mouse brain, the test was repeated with human antigen. We preferred the mouse to the human antigen, as it was more constantly available and gave more consistent and more marked results.

Frei tests were performed on thirty-three persons with chronic ulcerative colitis with and without stricture and on one patient with proctitis. Of these, two, both having chronic ulcerative colitis without stricture, gave positive reactions, and the remaining thirty-two, including the patient with proctitis, gave negative reactions. Four patients with stenosing lesions of the large bowel with or without accompanying ulcerations were also given the Frei test and gave positive reactions. Data concerning the Frei positive group are presented in the table.

NEUTRALIZATION TESTS

The virus-neutralizing property of the serum of all the patients in this series was also studied. We are aware that the efficacy of the neutralization test in lymphogranuloma venereum is a controversial subject and have discussed this question in some detail in another paper.¹² It may be stated here, however, that we have found this test a very satisfactory diagnostic measure.

Technic.—As the source of virus, the brain of a mouse showing marked symptoms of lymphogranuloma venereum infection is removed, triturated well with salt solution and then centrifuged. The supernatant fluid is made up into serial dilutions from 1:10 to 1:10,000. To one volume of the various virus dilutions is added two volumes of inactivated serum. The mixtures are shaken, placed in the incubator at 37 C. for one hour and then left in the refrigerator at 4 C. over night, from sixteen to seventeen hours. Two weighed white mice are now inoculated intracerebrally with 0.03 cc. of each of the various mixtures. Mice are kept under observation for three weeks and weighed every two or three days.

Symptoms appeared in unprotected animals in from two to eight days, consisting of ruffling of the fur, arching of the back, tremors, ataxia, priapism, conjunctivitis, convulsions, cachexia and occasional paralysis. In protected animals symptoms failed to develop or else appeared after a prolonged incubation period.

Controls, with use of a known positive and known negative serum, were conducted with each series of test serums, and routine histologic and bacteriologic studies were made.

The serums of all six of the Frei positive patients previously mentioned showed repeated and consistent neutralizing properties against the virus of lymphogranuloma venereum. The serums of the remaining thirty-two patients, who were Frei negative, failed to show such properties.

The intradermal neutralization test in the guinea pig, as described by Wassen,¹³ also was used. This method, however, was not found to give as consistent results on the whole as the intracerebral test in mice, there being considerable variation in reactivity from one guinea pig to another.

ISOLATION OF VIRUS FROM TISSUES

As the Frei and neutralization tests merely demonstrate that there is, or has been at some time in the past, a lymphogranuloma venereum infection, we sought to clarify the relation of this condition to chronic ulcerative colitis by attempting to isolate the virus from the affected tissues. Biopsy specimens from active areas of the bowel were studied for this purpose.

Owing to the lability of the virus and the small amount of material available, we found it most practicable to inoculate animals directly. The bit of tissue, usually about 5 mm. in diameter, was ground well with 1 cc. of salt solution and the resulting emulsion sucked up into a tuberculin syringe. Six white mice were then inoculated intracerebrally with 0.03 cc. of the emulsion, and one guinea pig was inoculated subcutaneously in the groin with from 0.2 to 0.3 cc. Bacterial cultures were also made to determine the kind and amount of contamination present. Mice tolerated this treatment surprisingly well. Some had acute symptoms and died in from one to three days, at which time hemolytic and occasionally nonhemolytic *Bacillus coli* was cultured from the brain. The majority, however, were able to overcome the initial bacterial infection and either contracted later a more slowly evolving infection with the lymphogranuloma venereum virus or survived symptom free until killed at the end of two months for further study. The guinea pigs inoculated frequently developed subcutaneous abscesses from which a variety of cocci and bacilli were cultured. Occasionally a slight sterile lymphadenitis appeared, but we were never able

11. Paulson, Moses: Intracutaneous Responses, Comparable to Positive Frei Reactions, with Colonic Exudate from Chronic Ulcerative Colitis Cases with Positive Frei Tests, *Am. J. Digest. Dis. & Nutrition* 3: 667-673 (Nov.) 1936; A New Diagnostic Intradermal Reaction with Bowel Antigen, *J. A. M. A.* 109: 1880-1886 (Dec. 4) 1937; The Diagnosis of Colitis Associated with Virus of Lymphogranuloma Venereum by Bowel Antigen, *Am. J. Digest. Dis. & Nutrition* 5: 554-562 (Nov.) 1938; Bowel Antigen, *J. A. M. A.* 112: 1788-1792 (May 6) 1939.

12. Rodaniche, Enid C.: The Neutralization Test in Lymphogranuloma Venereum, *J. Infect. Dis.* 66: 144-147 (March-April) 1940.

13. Wassen, Erik: Studies of Lymphogranuloma Inguinale from Etiologic and Immunologic Points of View, *Acta path. et microbiol. Scand.*, 1935, supp. 23, p. 1-181.

to recover virus from such nodes by passage to mice or other guinea pigs, nor were we able to prepare a satisfactory Frei antigen from them.

We were unable to isolate the virus of lymphogranuloma venereum by the described technic from either of the two Frei positive patients with typical chronic ulcerative colitis. Patient 1 was available for only one biopsy, but from patient 2 very satisfactory biopsies were obtained on three different occasions from active ulcerated areas of the bowel, showing considerable bleeding and exudation.

Of the four Frei positive patients with stenosing lesions of the large bowel with or without accompanying ulcerations, we were able to obtain lymphogranuloma venereum virus from two. Only one biopsy specimen was obtained from patient 4. This was taken shortly after the termination of a very successful course of treatment with sulfanilamide and was negative. From patient 5 two biopsy specimens were obtained, one of which gave negative results, the other proving unsatisfactory because of the presence of a hemolytic colon bacillus which killed all but one of the mice inoculated

to exist in a small percentage of cases of proved lymphogranuloma venereum but certainly cannot explain the negative results in so large a number. It is significant that our series included persons in all stages of the disease, from the acutely ill to those in whom there was apparent quiescence. The serum of six patients with negative Frei tests was tested both during a relatively inactive phase of the condition and during a subsequent flare-up with consistently negative results. On the other hand, serum from the six patients with positive Frei tests was repeatedly positive. It seems evident, therefore, that the condition of the patient at the time of bleeding could not account for the failure to observe neutralizing antibodies in the serum.

In the two Frei positive patients with chronic ulcerative colitis the relationship of the two conditions is difficult to evaluate. Our failure to isolate virus from the bowel lesions of these two patients, while suggestive, is not conclusive, in view of the difficulty encountered by ourselves and others in obtaining this virus from typical infections with lymphogranuloma venereum. Consideration also must be given to the possibility that

Significant Data for Six Frei Positive Patients with Various Disorders of the Large Bowel

Patient	Sex	Age	Race	Clinical Diagnosis	Proctoscopic Evidence	Frei Reaction	Neutralizing Power of Serum	Virus Isolations	
								Source of Biopsy	Result
1. F. B.	♂	39	White	Chronic ulcerative colitis	Numerous superficial ulcerations, no stricture	8 mm.	Positive	Ulcerated mucosa of rectum	Negative
2. M. G.	♀	28	White	Chronic ulcerative colitis	Granular bleeding mucosa, mucopurulent exudate, no stricture	7 mm.	Strongly positive	Ulcerated rectal mucosa Same 3 mo. later Same 1 mo. later	Negative Negative Negative
3. E. S.	♀	40	White	Rectal stricture with ulceration of the neighboring mucosa	Reddened granular mucosa, stricture 4-5 cm. from anal ring	10 mm.	Strongly positive	Ulcerated mucosa below stricture Same 5 mo. later	Negative Positive
4. L. P.	♂	40	White	Rectal stricture, regional colitis, colostomy	Friable bleeding mucosa, rectal stricture	12 mm.	Positive	Lower margin of stricture	Negative
5. P. H.	♀	50	White	Inflammatory stricture of sigmoid colon, benign rectal polyps, colostomy	Bleeding mucosa greenish yellow exudate, stricture 8 cm. from anal ring	7 mm.	Positive	Inflamed mucosa below stricture Same 13 mo. later	Negative Unsatisfactory
6. E. P.	♀	38	White	Rectal stricture	Smooth stricture 6.5 cm. from anal ring, no inflammation	9 mm.	Very strongly positive	Lower margin of stricture	Positive

within forty-eight hours. Of two biopsy specimens taken from patient 3, one gave negative results and the other yielded a highly virulent strain of the virus of lymphogranuloma venereum. We have maintained this strain for nine passages in mice and find that it cross immunizes with the strain previously isolated by us from a frank inguinal lymphadenitis. Frei antigen prepared with this strain gave positive Frei reactions in two known cases of lymphogranuloma venereum and negative results in three controls. A single biopsy specimen from the lower end of the stricture in case 6 yielded a strain of the virus of lymphogranuloma venereum of relatively low pathogenicity for mice. Symptoms appeared in two of six mice thirty days after injection. The strain died out after two passages but yielded satisfactory Frei antigen, as indicated by the production of positive Frei reactions in three cases of lymphogranuloma venereum and negative reactions in three controls.

COMMENT

The fact that thirty-two out of thirty-four patients (94 per cent) with chronic ulcerative colitis and proctitis in this series had negative Frei tests and showed no evidence of neutralizing antibodies in their serums against the virus of lymphogranuloma venereum indicates that this virus was in no way involved in the great majority of cases. A state of anergy has been shown

the virus, although not directly responsible for the bowel ulcerations, may have paved the way for other necrotizing agents to become established by producing a lymph stasis, as Frei originally suggested. In this connection it may be significant that Dack and his co-workers¹⁴ have isolated *Bacterium necrophorum* from all of these patients. Attention may also be called to a certain similarity in the proctoscopic picture between some lymphogranuloma venereum infections of the large bowel and chronic ulcerative colitis, especially well illustrated in our series by case 3, which may occasionally cause confusion in the differential diagnosis.

SUMMARY

Thirty-one patients with chronic ulcerative colitis and one with proctitis gave negative Frei reactions and did not possess neutralizing antibodies against the virus of lymphogranuloma venereum in their serums. Two patients with ulcerative colitis and four with stenosing lesions of the large bowel with or without accompanying ulceration, when similarly tested, gave positive results.

The virus of lymphogranuloma venereum was isolated from two of the Frei positive patients with rectal stricture.

14. Dack, G. M.; Kirsner, J. B.; Dragstedt, L. R., and Johnson, Robert: A Study of *Bacterium Necrophorum* in Chronic Ulcerative Colitis and of the Effect of Sulfanilamide in Treatment, *Am. J. Digest. Dis.* 6: 305-308 (July) 1939.

CONCLUSION

Lymphogranuloma venereum and nonspecific ulcerative colitis are independent diseases which, in their early stages, may resemble each other clinically and proctoscopically.

The six cases in which positive Frei tests were obtained are here summarized:

CASE 1.—F. B., a man aged 39, first seen in the gastrointestinal clinic in 1932, had had a diarrhea of six years' duration. The onset of illness had been sudden with the passage of bloody, liquid movements. Examination elsewhere disclosed no evidence of parasitic infection. Treatment had included emetine, calcium carbonate, belladonna, acetarsone, silver nitrate enemas and various forms of vaccine therapy.

Proctoscopic examination revealed an injected bowel mucosa with numerous superficial undermined ulcerations of various sizes: a picture not unlike that seen in amebic dysentery. X-ray studies demonstrated a small colon devoid of haustra, the rectum was narrowed and, on mucosal films, the mucosa of part of the transverse colon and superior descending portion was swollen.

On many examinations the blood and urine were normal. Wassermann and Kahn tests were negative. Repeated search for amebas in the stools and many stool cultures were consistently negative. Agglutination studies were also negative.

Treatment included the use of sedatives, tincture of belladonna and a bland, low residue diet. Very mild improvement followed the use of Bagen's serum. Numerous proctoscopic examinations by several observers were interpreted as showing various phases of a chronic nonspecific ulcerative colitis. When last examined, the rectal mucosa was reddened with several areas of punctate bleeding.

CASE 2.—M. G., a woman aged 28, entered the University of Chicago Clinics complaining of rectal bleeding which had lasted three years. Bowel movements were hard and there was much flatulence. Treatment by a local physician consisted of tannic acid enemas daily.

She had been treated for a Bartholin cyst infection a year and a half previously; the lymph nodes on the corresponding side were swollen and tender. One month later a recurrence of this infection again required incision and drainage.

Physical examination was essentially negative. Results of laboratory studies were normal. Agglutination tests for typhoid, paratyphoid and dysentery were negative. X-ray examination revealed a normal colon and terminal ileum. Proctoscopically the mucosa of the rectum and sigmoid was inflamed and granular and bled easily. There was a moderate mucopurulent exudate. The appearance was considered typical of chronic nonspecific ulcerative colitis.

Treatment included sulfanilamide up to 80 grains (5 Gm.) daily, cod liver oil retention enemas, azosulfamide up to 80 grains daily, nicotinic acid 80 mg. daily, sedatives and a bland diet. The patient's condition has remained essentially unchanged.

CASE 3.—E. S., a woman aged 40, was first seen in 1931 with bleeding from the rectum, which had continued for several years. She had been treated many years for arthritis involving the hands, knees and shoulders. Proctoscopic examination disclosed a reddened granular mucosa with several small superficial ulcerated areas; a fibrous band narrowed the ampulla. X-ray studies revealed a narrowed rectal ampulla, with absence of haustra in the descending colon. There was moderate secondary anemia.

Cultures and examinations of the stools for parasites were negative. Agglutination tests for typhoid, paratyphoid and dysentery were negative. The patient's course during the next nine years was variable. In 1933 a definite anal stricture at a level of 4 or 5 cm. was noted; the mucosa was granular and friable. Treatment included a series of injections with Bagen's serum, sulfanilamide and azosulfamide. Hospitalization was required for the treatment of perianal and ischiorectal abscesses and excision of a fistula in ano. The patient has continued on a program including a nonlaxative, low residue diet with sedatives, tincture of belladonna and thiamine hydrochloride. Recently there has been a decrease in the number of stools and the patient has improved subjectively.

CASE 4.—L. P., a man aged 40, was first seen in the University of Chicago Clinics in November 1933 with bloody diarrhea and rectal tenderness. In 1926 he had a penile sore treated with intramuscular injections. In 1928 another penile sore, associated with a sore throat and joint pains, was treated with intravenous and intramuscular injections. A positive serologic reaction was reported at this time. In February 1933 a draining rectal fistula was surgically treated elsewhere. Two Wassermann and Kahn tests as well as a spinal fluid examination were negative. No parasites were found in the stools, and repeated cultures were negative. Rectal examination disclosed the scars of healed fistulas; a marked stricture was palpable, and on proctoscopic examination the rectal mucosa was friable and granular.

Between April 3 and Oct. 13, 1934, the patient was treated with antimony and potassium tartrate, receiving from 3 to 10 cc. of a 1 per cent solution intravenously in three courses of ten injections each. Frequent dilations of the rectal stricture were necessary. In October the inguinal nodes on the left side were swollen and tender.

In June 1936, 8 inches of transverse colon was resected at the Mayo Clinic because of a regional colitis. In December 1937 a colostomy was performed because of obstruction. At this time an inflammatory mass was felt in the rectum and a similar mass involved the left portion of the transverse colon. He was subsequently treated with sulfanilamide, 60 grains (4 Gm.) daily. The purulent discharge from the colostomy stopped and the patient gained 50 pounds (23 Kg.). When last seen, he was in good general health. On proctoscopic examination the rectal mucosa was still definitely inflamed; the stricture was unchanged.

CASE 5.—P. H., a woman aged 50, entered the University of Chicago Clinics with lower abdominal pain, malaise and diarrhea and "discharge of pus from the rectum," which had been present four or five weeks. The onset of illness had been sudden, with chills and a fever rising to 103 F. There had been a loss of 22 pounds (10 Kg.) during this time. Inquiry revealed probable gonorrheal infection two years previously, treated by injections and vaginal douches.

Physical examination was negative except for the presence of a second degree cystocele, a lacerated cervix and apparent fixation of the pelvic structures. Rectal examination revealed an obstruction at a level of 8 cm. from the anal ring and a large indurated mass on the anterior wall of the rectum. On proctoscopic examination the rectal mucosa bled easily, a thick, greenish yellow exudate was noted, and several small polypoid areas were found. Roentgenograms revealed a lesion constricting the upper portion of the rectum, probably neoplastic.

Laboratory studies revealed a moderate secondary anemia; Wassermann and Kahn tests were negative. Agglutination tests for typhoid, paratyphoid, and Sonne and Flexner dysentery were negative.

Three biopsies of the polypoid area disclosed no evidence of neoplasm. A Frei test performed in 1938 with a commercial antigen was negative. A colostomy was performed because of the obstruction. It was noted that there was a large inflammatory mass in the pelvis fixing the sigmoid colon, uterus and tubes in one mass. The sigmoid for a distance of 6 inches proximal to the mass was thickened, its wall edematous and covered with a filmy exudate. There were no enlarged lymph nodes. The patient made an uneventful recovery and subsequently was treated with sulfanilamide given orally and in retention enemas. Her course has been quite satisfactory. The rectal discharge has diminished markedly and the mucosal inflammation has disappeared.

CASE 6.—E. P., a woman aged 38, was referred to the gastrointestinal clinic for proctoscopic examination. She stated that thirteen years previously a rectal stricture had been dilated at another hospital in the city and that subsequently frequent such dilations were necessary. Two years previously treatment was required for a Bartholin's abscess on the right side. She stated that she had no venereal infection, and several serologic studies were reported negative. Several months ago she began to complain of transient sharp burning pains in the lower mid-abdominal region accompanied by a sense of pressure in the rectum. Pelvic examination revealed an elongated tender mass on the left side with evidence of induration in the right tubo-

ovarian region. Proctoscopic examination disclosed a smooth stricture 6.5 cm. from the anal ring, the lumen wide enough to admit a finger tip.

X-ray studies were interpreted as demonstrating an unusual narrowing of the rectal ampulla and sigmoid.

Laboratory studies were negative. The patient at the present time is being treated in the gynecology clinic for the pelvic infection.

VITAMIN P IN VASCULAR PURPURA

I. NEWTON KUGELMASS, M.D.

NEW YORK

CHEMISTRY OF VITAMIN P

Vitamin P was postulated by Szent-Györgyi¹ as a regulator of vascular permeability, isolated in crystalline form as a flavone glucoside from lemon juice and named citrin to indicate its chemistry. It was found to consist of mixed crystals of two related flavone dyes, the glucoside hesperidin $C_{50}H_{60}O_{27}$ and the glucoside of eriodictyol; the former constitutes the major part of citrin but the latter is responsible for the chemical reactivity and color production. The glucosides of citrin are but two forms of the same flavonone glucoside, the eriodictyol glucoside being formed from hesperidin by demethylation during ripening of citrus fruits, particularly lemon, orange and grapefruit.

Citrin forms light yellow crystals sparingly soluble in water but very soluble in alkali, giving intense yellow solutions. The relative composition of the solid and liquid phases, respectively, is determined by the solubility of its two components; the crystals consist mostly of insoluble hesperidin and small amounts of soluble eriodictyol, while the solutions consist mostly of eriodictyol glucoside and traces of hesperidin. These glucosides are well tolerated in doses of several hundred milligrams, retained in variable amounts by the body and readily recovered in the urine.

The flavones are a class of naturally occurring yellow plant pigment, phenyl derivatives of the 1,4-pyrone or γ -pyrone nucleus. The intensity of the color depends greatly on the position of the hydroxyl groups and is most pronounced if two are ortho in position to each other. The pigments occur in plants as glycosides, one or more hydroxyl groups being combined with a sugar molecule. The formula may be expressed by sugar-O-R, where R represents the flavone group attached to carbon —1 of the sugar, usually dextrose. This renders the auxochrome group inactive so that in the plant the flavone glycosides are practically colorless until they are hydrolyzed and the characteristic yellow develops.

The role of glycosides in plants has been interpreted as a mechanism whereby the substances which have great physical activity are held inert until they are needed in the metabolism of the plant or in detoxifying poisonous substances so that they will not injure plant cells. It is possible that the latter mechanism maintains these substances for protecting the functional integrity of the vascular endothelial system in man,² demonstrated in vascular purpura. These glycosides are usually levorotatory, crystalline, colorless, bitter and soluble in water.

CAPILLARY RESISTANCE OF CHILDHOOD

Capillary resistance varies with age and nutritional status. During the first few weeks of life an infant shows the highest level of capillary resistance, manifested uniformly throughout the body to the extent of about 500 mm. of mercury. This gradually diminishes during infancy until the adult level is attained, approximating about 150 mm. of mercury. There are marked fluctuations, however, not only in the level of capillary resistance but also in various sites of the body, the values increasing from a minimum at the head to a maximum at the extremities in the same child. The variations in capillary resistance with age and site reveal the remarkable adaptation of the body to environmental offense.

Capillary resistance may be measured by tourniquet, intradermal venule, graded suction or positive pressure tests; the first is a simple qualitative index of vascular status, the second a pseudoquantitative impractical measure and the third and fourth fairly accurate measures used in this study. When cutaneous purpuric spots do not occur spontaneously they may be induced in susceptible children by any of these methods. The negative pressure method is most accurate but was not particularly adapted for clinical routine with children. The positive pressure method determines fragility in terms of the number of ruptured capillaries developing under standard conditions in response to increased intracapillary pressure maintained for five minutes.

Capillary tonus decreases in vascular hemorrhagic diseases³ with escape of normal blood from a weakened capillary bed or vascular endothelium as a result of trauma, pressure, avitaminosis, bacterial invasion, chemical injury or lymphatic infiltration. The vast surface of the minute capillaries thus becomes weakened by mechanical injury exceeding the normal tension at that site by nutrient deficiency leading to inadequate endothelial repair, by sensitization to substances allergenic to susceptible children, by interaction of bacterial toxins with vascular structures, by precipitation of bacterial emboli and by actual chemical destruction of capillary cells.

The value of yellow benzopyrane dyes or group of flavones in restoring resistance to damaged capillaries has been determined in cases of vascular hemorrhagic diseases showing normal levels of blood-clotting constituents. Preliminary tests indicated that citrin does not alter the concentration of any of the blood components involving clotting—fibrinogen, prothrombin or platelets—in normal children or in those affected with hemorrhagic disease. With the alleged therapeutic specificity of the flavones it became a relatively simple procedure to determine their value in nutritional, allergic, infectious and toxic diseases characterized by vascular bleeding. The vitamin material was prepared commercially from orange peel according to the method of Szent-Györgyi.⁴ The solution of 50 mg. per cubic centimeter of flavonones consisting of eriodictyol glucoside and hesperidin was given in doses of 150 mg. orally. Although the number of cases reported is very limited they were clearcut, permitting the first approximation of the merits of vitamin P in vascular bleeding.

REPORT OF CASES

Nutritional Purpura.—J. T., a dystrophic dehydrated white boy of 5 months weighing 6½ pounds (2,948 Gm.), suddenly developed small discrete purpuric spots over the abdomen and

3. Kugelma, I. N.: *Clinical Control of Chronic Hemorrhagic States in Childhood*, J. A. M. A. **102**: 204 (Jan. 20); 287 (Jan. 27) 1934.

4. Szent-Györgyi, Albert: *Ztschr. f. physiol. Chem.* **255**: 126, 1938.

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1. Armentano, L.; Benthath, A.; Béres, T.; Rusznayk, Istvan, and Szent-Györgyi, Albert: *Deutsche med. Wchnschr.* **62**: 1325 (Aug. 14) 1936.

2. Scarborough, Harold: *Biochem. J.* **33**: 1400 (Sept.) 1939.

lower extremities. The infant was premature, weighed 4 pounds (1,814 Gm.) at birth and failed to thrive on breast feeding, proprietary mixtures and cow's milk modifications. The infant responded to parenteral fluids, blood transfusion and gradually increasing amounts of lactic acid milk with 10 per cent added carbohydrate. The purpura diminished with clearance of the diarrhea but cleared more rapidly when the vitamin P mixture was given. The number of punctate hemorrhages induced by the positive pressure test for capillary resistance during the course of treatment indicates the effectiveness of the vascular vitamin:

Day	5	10	15	20	25	30
Petechiae	51	45	35	30	8	5
Treatment	Transfusion		Vitamin C		Vitamin P	

Allergic Purpura.—C. H., a 10 year girl of allergic constitution, had high fever, recurrent chills, abdominal pain and bloody stools. The child appeared septic, with no other abnormalities, and was considered suffering from the current intestinal infection. The blood showed 72 per cent hemoglobin, 4,100,000 red cells and 10,500 white cells, with 42 per cent polymorphonuclears, 50 per cent lymphocytes, 7 per cent eosinophils and 1 per cent basophils. On the following day the right ankle swelled, purpuric spots developed over the extremities, and the right knee and left ankle also became affected. The symptoms cleared spontaneously within a week, but the purpura persisted. Positive pressure tests of capillary resistance to determine the relative merits of 10 per cent calcium gluconate and vitamin P mixture indicated the superiority of the latter in improving vascular function:

Day	5	10	15	20	25	30
Petechiae	115	90	48	30	45	22
Treatment	Calcium		Vitamin P		0	Vitamin P

M. C., a 15 year old allergic girl, had recurrent cutaneous hemorrhages associated with nosebleeds, high fever, occasional chills, abdominal pain and persistent diarrhea with mucus and blood. The intestinal spasm was aggravated by ingestion of egg white, wheat, alcohol, cinchophen and phenobarbital, as corroborated by positive cutaneous tests. The blood picture varied in leukocytic response with a tendency to lymphocytosis. The clotting components were normal in concentration, the clotting time was normal, bleeding time normal and tourniquet test positive. The condition abated with elimination of offending allergens, but purpuric manifestations continued. Sulfanilamide therapy cleared most of the symptoms except the purpura. Vitamin P mixture given thereafter resulted in arrest of cutaneous hemorrhage and decrease in the number of petechiae following positive pressure determinations:

Day	5	10	15	20	25
Petechiae	120	80	95	20	15
Treatment	Allergen elimination		Sulfanilamide		Vitamin P

Infectious Purpura.—K. B., a 9 year old girl, had abdominal pain, high fever and purpura over the lower extremities within a week of recovery from scarlet fever. A fresh crop of purpura appeared daily for a week, extending upward to the trunk, arms, palate and conjunctivas. There was no hematuria or other evidence of nephritis despite the destructive effect of scarlet fever toxin on the glomerular endothelium. Positive pressure tests of capillary resistance showed favorable effects from daily administration of vitamin P solution:

Day	5	10	15	20	25	30
Petechiae	96	50	92	41	85	30
Treatment	Vitamin P		0	Vitamin P		Vitamin P

Mechanical Purpura.—P. A., a 9 year old boy, had petechiae in the conjunctivas and eyelids during whooping cough. G. A., a 16 year old mentally retarded boy with epilepsy, occasionally

showed purpuric extravasations following severe seizures resulting from water-guzzling bouts during a ketogenic regimen. H. B., a 10 year old girl with Perthe's disease, showed orthostatic purpura when plaster of paris casts were removed and the child was allowed freedom of activity. In each of these cases the daily administration of vitamin P solution failed to show any change in the number of petechiae demonstrated by positive pressure test.

SUMMARY

A solution of eriodictyol glucoside and hesperidin, vitamin P concentrate, administered orally was effective in treatment of two children with allergic purpura, a child with infectious purpura and an infant with nutritional purpura, and ineffective in three cases of mechanical purpura. Vitamin P constitutes another valuable adjuvant in the management of vascular purpura, provided the underlying cause is cleared.

1060 Park Avenue.

Clinical Notes, Suggestions and New Instruments

ENDOMETRIOSIS OF THE ILEUM WITH CHRONIC PARTIAL INTESTINAL OBSTRUCTION

PAUL M. GLENN, M.D., AND JOHN J. THORNTON, M.D.
CLEVELAND

Endometriosis is not an uncommon condition. Sampson is quoted as seeing it 101 times in 474 gynecologic operations and Green-Armytage in 8.9 per cent of 1,000 surgical cases.¹ In this hospital endometrial implants are found in about 10 per cent of pelvic operations.² Regarding the organs involved, figures from the Mayo Clinic³ state that 689 organs of 576 patients were involved with this diagnosis. These were mostly pelvic genital organs, and the intestine was involved in only seventeen instances. In these instances the sigmoid flexure of the colon was the site of endometrial implants in fourteen cases, the appendix in one and the ileum in two cases. Keene and Kimbrough⁴ did not find the small intestine involved in any of 118 proved cases, nor did Cullen⁵ in reporting personal observations over a twenty-five year period.

Endometrial implants in the ileum, therefore, appear to be an unusual occurrence. Such a lesion producing small intestinal obstruction is a rarity, although obstruction of the lower portion of the bowel by growth of endometrium in the rectovaginal septum is well known. Review of the English literature for the past twenty years reveals only four cases⁶ of endometrial implants in the small intestine with some degree of obstruction present.

The true incidence of endometrial implants in the small intestine, however, is unknown. They are not looked for in a routine way on that organ in gynecologic operations. In rare instances an implant in the small intestine is an incidental finding at operation, or it may be the causative lesion producing intestinal symptoms which is discovered at operation.

Because of the apparent rarity of this condition, the following cases seem worthy of being reported.

From the Departments of Medicine and Surgery, Lakeside Hospital and Western Reserve University School of Medicine.

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5. Cullen, T. S.: The Distribution of Adenomyomas Containing Uterine Mucosa, *Arch. Surg.* 1: 215 (Sept.) 1920.

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REPORT OF CASES

CASE 1.—A white woman aged 31 entered the hospital complaining of "stomach trouble." The past history revealed that she had generally enjoyed good health. After the menarche at the age of 12 she had cramps in the lower portion of the abdomen during the menses for a few years. Five years before admission she had an (induced?) abortion, followed by profuse leukorrhea and frequent attacks of pain in the lower abdomen for about eight months. She had no other pregnancies.

The present illness began about one year before admission with an occasional feeling of fullness and vague abdominal distress after meals. This was attributed to various foods, which were eliminated from her diet without relief. The attacks increased in severity and duration. They were then characterized by cramplike pain starting in the midportion of the abdomen on the right and radiating to the left side, occasional nausea and vomiting, constipation and some abdominal distention. Between attacks she found it necessary to use laxatives frequently because of increasing constipation. About eight months before admission she first noted that the attacks were usually associated with her menstrual periods. By limiting her diet to liquid and soft foods during her menses the severity of attacks was ameliorated, but gradually this curtailment became less

It was believed that the patient suffered from chronic partial intestinal obstruction as a result of adhesions from an old pelvic inflammatory disease. Because of the long history, the marked distention and the poor general condition of the patient it was decided to use the Miller-Abbott intestinal tube⁷ to decompress the intestine, improve the condition of the patient for operation

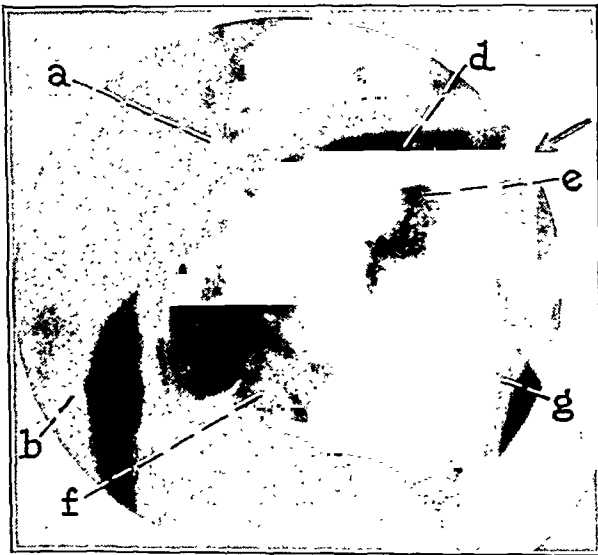


Fig. 1.—Appearance of lesion: a, sacro-iliac joint; b, ilium bone; d, terminal ileum; e, area of constriction; f, dilated ileum; g, Miller-Abbott tube.

effective. For four months the attacks had been quite severe and their duration had increased to from seven to ten days. The last attack began six weeks before admission and persisted until she entered the hospital. During this interval she was never entirely free of symptoms, though there were brief periods of relief from pain, vomiting, constipation and distention following the use of laxatives and enemas. During the year before admission she had lost more than 15 pounds (6.8 Kg.).

The patient was undernourished and chronically ill and she weighed 80½ pounds (36.5 Kg.). Positive manifestations were limited to the abdomen, which was considerably distended and tympanic, although peristalsis was visible. Borborygmi were frequently audible and coincided with exacerbations of the abdominal pain. Vaginal examination revealed induration in both adnexal regions.

Temperature, pulse, respirations and blood pressure were normal. Laboratory data showed 9,450 white blood cells with a normal differential count, 4.52 million red blood cells, 80 per cent hemoglobin (Sahli), a negative reaction to the Kline exclusion test, blood urea nitrogen 18.5 per hundred cubic centimeters, plasma chlorides 614 mg. and carbon dioxide combining power 44.8 volumes per cent. The sedimentation rate was normal and analysis of the urine negative.

Roentgenograms of the abdomen showed numerous distended intestinal loops with a "ladder" pattern. An enema of barium sulfate did not reveal a colonic lesion.

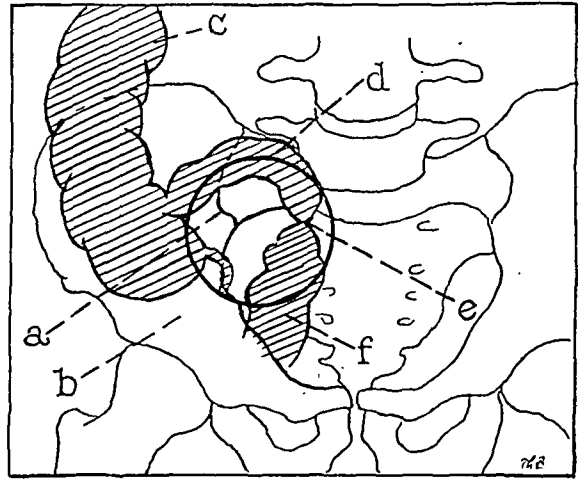


Fig. 2.—Location of lesion shown in figure 1.

and possibly aid in establishing a more accurate diagnosis. Prompt symptomatic relief and marked improvement of the distention followed the intestinal intubation. Within twenty-four hours the tube had advanced sufficiently for the patient to take adequate fluids, chloride and food⁸ orally.

The advance of the tube through the lower portion of the ileum was quite slow, but the tip finally stopped in the terminal ileum. Injection of a thin suspension of barium sulfate through the tube showed a narrowed area in the terminal ileum about 12 cm. from the cecum (figs. 1 and 2), which the roentgenologist believed was due to an adhesion. Ileum proximal to the narrowed area was still somewhat dilated in spite of constant drainage of the intestine for the preceding seven days. That

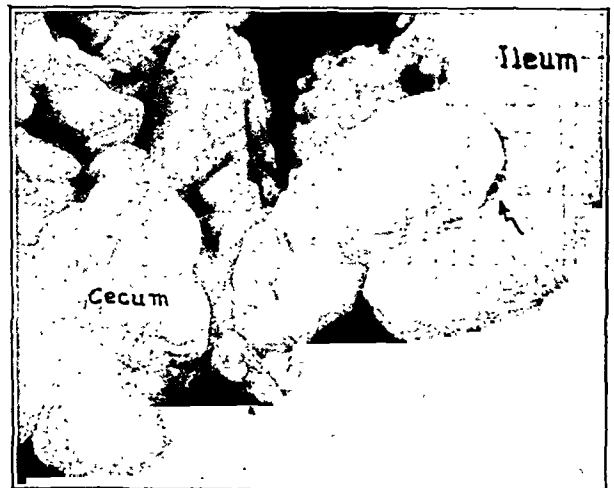


Fig. 3.—Gross appearance of the constricting lesion. The arrow points to two grossly apparent dark purple nodules of endometrial tissue.

the dilated intestine was not paralyzed was evident, because kymographic records showed it to have activity of the type found just proximal to an area of obstruction.⁹

7. Abbott, W. O.: Intubation of the Human Small Intestine: XII. The Treatment of Intestinal Obstruction and a Procedure for Identifying the Lesion, *Arch. Int. Med.* 63: 453 (March) 1939.

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After twelve days with the intestinal tube in place, during which time the patient had a daily dietary intake of 2,200 calories the residue of which was drained at the point of obstruction, she was in much better condition for operation. At operation about 3 feet of the terminal ileum had a thick wall and was slightly dilated. The tip of the intestinal tube was in this segment. About 15 cm. proximal to the ileocecal valve the thickening and dilatation of the ileum ended abruptly in a moderately firm, sharply circumscribed, reddish purple area of constriction. The lesion was entirely free from all surrounding structures and the serosa was intact and glistening everywhere except at the center of the lesion, where there was a dark purple nodule measuring 2 or 3 mm. in diameter. No abnormality was noted elsewhere in the intestine. No endometrial implants were noted in the pelvis, but a detailed inspection was impossible because both tubes and ovaries showed evidence of rather extensive chronic inflammation with numerous adhesions. It was decided not to attempt any pelvic surgery because the principal lesion was in the intestine.

The constricting lesion and ileum distal to it were removed and an end to side ileocecostomy was done. The postoperative course was entirely uneventful. The intestinal tube was left in place and constant suction was maintained to keep the intestine emptied at the suture line. Oral intake was started on the second postoperative day. Intestinal drainage was discontinued



Fig. 4.—Section under high power, showing endometrial implants in muscularis of ileum.

on the fifth postoperative day without evidence of obstruction and the tube was removed on the seventh day. Convalescence continued uneventfully and follow-up observation for five months has shown no clinical or roentgenologic evidence of obstruction. She now weighs 97 pounds (44 Kg.), which is more than she has ever weighed.

CASE 2.—A white woman aged 50, a patient of Dr. A. J. Beams, made presenting complaints that were almost identical to those in case 1 except that her story was of two years' duration. Preoperative management was also similar to that in the first case but the diagnosis of endometriosis of the ileum was made preoperatively. The gross appearance of the lesion, which was in the same location as the lesion in the first case, is shown in figure 3.

Microscopic examination of both of the lesions (fig. 4) showed intact intestinal mucosa. There were numerous islands of endometrial tissue throughout the muscularis, and fibrosis and focal lymphocytic infiltration of the muscularis and serosa. It is very probable that the inflammatory reaction which usually accompanies endometrial implants resulted in fibrosis, with progressive constriction of the lumen of the ileum.

The periodicity of the symptoms of intestinal obstruction in association with the menses was probably due to the hyperplastic reaction of the endometrial tissue at such times with a greater degree of obstruction to the lumen of the ileum than between the menses when the endometrial tissue was in the resting stage. The reaction was progressive until the lumen of the ileum was constricted sufficiently to produce continuous symptoms.

CONCLUSIONS

1. In the cases here presented endometrial implants in the terminal ileum produced chronic partial intestinal obstruction.
2. The preoperative use of the Miller-Abbott intestinal tube was valuable (a) in controlling the symptoms of intestinal obstruction while the patient's condition was being improved for operation, (b) in accurately localizing the point of obstruction and (c) in simplifying the technical aspects of the operative procedure.

PULMONARY COMPLICATIONS DURING PREGNANCY

MILTON G. POTTER, M.D., BUFFALO

When considering diseases of the lungs during pregnancy, one must remember that there are certain normal physical changes and signs in the chest due to pregnancy.

As the growth of the uterus continues there is slight congestion of the lungs with an increased lateral expansion, the excursion of the diaphragm is decreased and the breathing becomes more costal. These changes are, as a rule, more pronounced in the primipara than in the multipara, because there is less relaxation of the abdominal muscles in the former.

It becomes immediately apparent, therefore, that such conditions bring about an ideal nidus for the harboring of infection and explains somewhat the reason why quiescent infections in the lungs may be activated.

This is particularly true of women with arrested pulmonary tuberculosis who become pregnant.

It is an astounding fact that approximately 50,000 women in the child-bearing period die each year from tuberculosis and that a total of 32,000 tuberculous women become pregnant each year in the United States.

This condition places a terrific burden of responsibility on the medical profession, for while there are certain generalities on which there is universal agreement, the question of treatment, unfortunately, is highly individualized.

Every one is pretty well agreed that matrimony in the presence of active pulmonary tuberculosis should be forbidden, for it aggravates the disease, may infect the husband and propagates tuberculous children.

It is also agreed that the strain of pregnancy and lactation add to the risk of reactivation of a quiescent tuberculous process.

While it is conceivable that pregnancy may be permitted for women whose tuberculosis has been in the quiescent stage for a period of two years or more, one can never tell when the latent disease may again become florid. One must remember that often no untoward effects are observed until the puerperium, at which time the disease flares up and resembles pneumonia more than tuberculosis. Pregnancy definitely aggravates the disease.

Unfortunately the obstetrician's advice concerning matrimony is seldom sought and he does not come into the picture until after the marriage.

If the patient has not conceived, contraceptive advice should be given. If the patient is pregnant and her tuberculous condition has been quiescent, it is proper for the physician to allow the pregnancy to continue. It is my belief and my practice that if the tuberculous process is reactivated before the fifth month abortion should be induced. In the late months of pregnancy, however, nonintervention should be the rule, as the risk of delivery is no greater than a therapeutic abortion.

If the pregnancy is allowed to continue, the patient should receive every dietary and hygienic attention accorded the non-pregnant person, and the cooperative help of an internist is not only desirable in the treatment of this complication but necessary.

A potential tuberculous patient should have as short a labor as possible, and intervention to shorten or obliterate the second stage of labor, under local or spinal anesthesia, is proper. Lactation should be prohibited, the baby separated from its mother and, if repeated pregnancies occur, sterilization should be recommended.

Another pulmonary complication during pregnancy is pneumonia. It may be of any of the types seen in the nonpregnant person, such as bronchial, lobar or influenzal. Regardless of

From the Obstetrical Department of the Millard Fillmore Hospital.

the type, the condition is most serious and in 50 per cent of the cases the onset is usually manifested by a feeling of malaise, stuffiness in the head, sore throat, a slight rise in temperature, with or without pain in the chest, and gastrointestinal disturbances.

Whether this group of symptoms is called grip or a common cold at the onset is immaterial. The fact remains that a pregnant woman with this syndrome should have the serious consideration of the physician in charge and treatment should be instituted immediately. It has been my observation that too often the physician considers this condition lightly and allows what might have been a mild attack to progress into one of the more serious types of pulmonary infection.

It must be remembered that we are dealing with a person whose natural resistance and phagocytosis is lowered by her pregnancy, which also has produced an increased congestion in her lungs. This combination of circumstances makes the respiratory tract a fertile field for continued growth of pathogenic organisms and, unless checked, will produce serious consequences for mother and baby.

It is my belief that in this combination of circumstances a bacteremia is more common than is generally realized and, if one is dealing with virulent organisms, the end results can be most disastrous, even though one institutes as complete therapy as possible.

Some years ago, during an epidemic of so-called influenza, I instituted the practice of taking cultures from the nose and throat of every pregnant private patient who was suffering with what was considered the grip. The following reports of cases, I think, will help to prove the point I am trying to make, namely that bacteremia is present more times than is generally realized and not infrequently dire results are noted in either mother or baby or both.

REPORT OF CASES

CASE 1.—Mrs. A. complained of sore throat, cough, general malaise and a severe backache. She expelled a mass which included the placenta with a five months fetus within the amniotic sac; this was sent to the laboratory and examined by the late Dr. Benjamin Roman, pathologist at the Buffalo General Hospital. Culture of the mother's throat revealed many influenza bacilli, and the same organisms were recovered from the fetus. The patient recovered.

CASE 2.—Mrs. B., a secundipara aged 33, had severe nausea with both pregnancies. In the fourth month of the second pregnancy she became ill with a so-called grip infection, which lasted for ten days. At the end of this time she started in labor and passed a four months fetus and a placenta. These specimens were sent to the laboratory for examination. A pure culture of pneumococci was found in the lungs and heart of the fetus and the identical organism was recovered from the patient's nose and throat. The patient recovered.

CASE 3.—Mrs. B., a primipara five months pregnant, previous to admission to the Children's Hospital had a history of grip and some vaginal flow for two weeks. On admission she had an elevated temperature, symptoms of grip, a bloody vaginal discharge, a cervix admitting two fingers and irregular labor pains. Several hours after the vagina had been packed the patient was delivered of twin boys, who lived fifteen minutes. The placenta was most friable and adherent and was finally removed manually in sections. The fetus and placenta were sent to the laboratory for culture. Streptococci were recovered and the same strain was obtained from the mother's throat. The patient recovered.

CASE 4.—Mrs. H., a secundipara aged 35, six months pregnant, contracted what was considered an ordinary head cold. Her family physician treated her for a period of one week. No abnormal chest signs were evident during the entire sickness except slightly diminished respiratory sounds. After the third day of her illness she became cyanotic and irrational and oxygen was administered continuously. The heart action, for the most part, continued to be slow, regular and of good volume. On the sixth day of her illness she went into labor (lasting two hours) and expelled a six months living fetus. After delivery of the placenta she went into shock, the pulse became very faint and rapid and cyanosis became more pronounced. Twelve hours after expulsion of the fetus the mother

died and after fifteen hours the baby died. Bacterial examination revealed organisms in the mother's nose and throat identical with those in the organs of the fetus.

CASE 5.—Mrs. X, two weeks before the onset of labor, contracted a sore throat, coryza and general malaise. An almost pure culture of streptococcus was obtained from the throat. Her general condition did not improve greatly until after the delivery of her child. She gave birth to a male child who appeared normal in every respect. The delivery was not remarkable. Twenty-four hours later the baby was found dead in his crib. At autopsy the lungs were in the red stage of hepatization and the liver and spleen were soft and friable. Nothing else of note was found. Cultures from the liver and spleen yielded the same strain of streptococcus as was previously obtained from the mother's throat.

COMMENT

The cases here reported and their histories impressed me tremendously and taught me that even in the presence of adequate antepartum and medical care disastrous results may be expected when the respiratory tract of a pregnant woman is infected with virulent organisms.

PANTOTHENIC ACID IN HUMAN NUTRITION

T. D. SPIES, M.D., CINCINNATI; S. R. STANBERY, M.A.,
BIRMINGHAM, ALA.; R. J. WILLIAMS, PH.D., AUSTIN,
TEXAS; T. H. JUKES, PH.D., AND S. H.
BARCOCK, PH.D., BERKELEY, CALIF.

The syndrome resulting from a lack of pantothenic acid in the diet of the chick and the rat has been described¹ and the recent synthesis of pantothenic acid² has made this substance available in pure form for clinical studies. Since there was no information regarding the possible toxicity of this substance in human beings, we administered varying amounts of calcium or sodium pantothenate to fifteen people and observed that 100 mg. of either salt may be injected intravenously without causing a reaction and without significant change in blood pressure, pulse, temperature and respiration.

In making these observations we assayed the blood and urine for pantothenic acid³ before and at intervals after injection. We found that the pantothenic acid content of the blood increases up to 50 per cent above the preinjection level and that this increase is noted within the first three hours after the injection but that in all instances the value returns to its previous level within twenty-four hours. Urine specimens showed an increased pantothenic acid concentration immediately following the injection, but this also returned to normal within twenty-four hours. The blood pantothenic acid concentration of twenty-eight patients with pellagra, beriberi and riboflavin deficiency was decreased from 23 to 50 per cent, as compared with the levels of eighteen normal persons.

Using a similar technic⁴ we have assayed this same blood for riboflavin and have found that following the injection of

University of Cincinnati Studies in Nutrition at the Hillman Hospital, Birmingham, Alabama. From the Department of Internal Medicine, University of Cincinnati, the Departments of Preventive Medicine and Chemistry, University of Texas, and the Agricultural Experiment Station, University of California. This study was aided by grants from the John and Mary R. Markle Foundation, the Research Corporation, and Anheuser-Busch, Inc.

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pantothenic acid there likewise is a rise of from 20 to 30 per cent in the riboflavin level of the blood. The administration of 20 mg. of calcium pantothenate daily, for four days, to four persons with cheilosis and typical ocular manifestations diagnostic of riboflavin deficiency caused similar temporary increases in the blood pantothenic acid and riboflavin. These values, however, returned to their previous levels when therapy was discontinued.

We have found that the injection of 200 micrograms of riboflavin per kilogram of body weight caused an increase of 80 per cent in the blood flavin concentration and of 45 per cent in the pantothenic acid level. While these values remained high for from three to four hours, they returned in each instance to the former level by the next day.

These observations indicate that pantothenic acid is essential to human nutrition and that its function is probably associated with that of riboflavin.

Special Clinical Article

THE DIAGNOSIS OF HEART FAILURE

CLINICAL LECTURE AT NEW YORK SESSION

TINSLEY R. HARRISON, M.D.

NASHVILLE, TENN.

Heart failure is of two general types, which may be conveniently designated as forward and backward failure respectively. Forward failure, which is characterized by inability, usually setting in suddenly, of the heart to supply an adequate amount of blood to the body tissues, may be subdivided into (a) sudden death (usually brought about by ventricular fibrillation), (b) cardiac syncope (which is commonly due to sudden slowing of the heart) and (c) cardiac collapse (which may be induced by extreme tachycardia, by acute myocardial injury or by sudden hindrance to the heart in carrying out its work). In all these conditions the chief clinical symptoms are those referable to the central nervous system and are brought on by a deficiency of the blood supply to this vital area, the severity of the symptoms depending on the degree and the rapidity of onset of the circulatory deficiency to the brain.

Backward failure of the heart, on the other hand, occurs when, because of an excessive load or advanced disease of the musculature or (more commonly) because of a combination of these two factors, the degree of ventricular dilatation becomes sufficient to impose an impediment to the emptying of the corresponding auricle. The auricular pressure is therefore raised, and this leads to a rise in pressure in the veins which drain into the affected auricle and to congestion in the vascular bed from which these veins arise. Since in most of the common types of heart disease the greater strain is on the left side of the heart, such congestion usually occurs first in the pulmonary circuit, where it produces the clinical manifestations of dyspnea, cough, rales in the lungs (when the congestion has become severe enough to cause edema of the lungs), decreased vital capacity and prolongation of the pulmonary circulation time. In most cases congestion in the systemic circuit does not occur until the increase in pulmonary pressure has become sufficiently great to induce secondary dilata-

tion of the right ventricle with a rise in the pressure in the right auricle. When this takes place the characteristic manifestations of systemic engorgement can be noted. These include distention of the veins, enlargement of the liver, edema of the lower portion of the body and albuminuria.

Some of the important features and causes of these two general types of heart failure are summarized in table 1. The discussion to follow will, however, be concerned solely with the diagnosis of backward (congestive) failure, because this is the common type of chronic heart failure.

Before a diagnosis of congestive heart failure can justifiably be made in a given case two questions must be answered in the affirmative. These are 1. Does this patient have heart disease? 2. Is congestive heart failure the only syndrome which can account for the symptoms? Since the answers to these two questions are based on entirely different criteria, they will be considered separately.

THE DIAGNOSIS OF HEART DISEASE

Attempts to discuss in detail the evaluation of all the various manifestations of heart disease would obviously lead too far afield. For the purpose at hand it will suffice to mention briefly some phenomena which are practically diagnostic of heart disease and other manifestations which are suggestive of it. A reliable history of substernal distress appearing during muscular effort and disappearing within a few minutes after the subject has begun to rest is almost certain evidence of angina pectoris and hence of a certain type of heart disease. The presence of enlargement of the heart constitutes conclusive evidence that heart disease is present. Diastolic murmurs almost invariably mean heart disease. (It is recognized that occasionally functional diastolic murmurs occur in persons with marked hypertension or even in persons with thyrotoxicosis or severe anemia. However, such murmurs are rarely if ever seen except when the process has involved the heart, and hence one is justified in regarding a diastolic murmur as constituting almost certain evidence of heart disease.)

There are certain other phenomena which constitute suggestive evidence of heart disease. These include a history of rheumatic fever, long-standing and well marked elevation of the blood pressure, chronic auricular fibrillation, a heart rate which is below 40 persistently, and gallop rhythm with the extra sound occurring in diastole. The latter phenomenon in itself is practically diagnostic of heart disease but is listed among the suggestive signs because occasionally it may be impossible to distinguish between a normal third heart sound, an audible auricular contraction, reduplication of one of the sounds and true gallop rhythm. Another sign which usually indicates the presence of heart disease is a persistent and very loud systolic murmur. (Faint or even moderately loud systolic murmurs are often heard in the absence of structural disease in the heart.) Finally, there are certain electrocardiographic manifestations which suggest the presence of heart disease. These include a well marked prolongation of the auriculoventricular time, bundle branch block, aborization block and certain deformities of the T waves and the ST intervals. Practically every patient with structural disease of the heart will be found on examination to present one or more of the manifestations that have been mentioned. Of them enlargement of the heart is the most common and the most important.

From the Department of Medicine, Vanderbilt University School of Medicine.

Read in the Medical Division of the General Scientific Meetings at the Ninety-First Annual Session of the American Medical Association, New York, June 11, 1940.

THE RECOGNITION OF CONGESTIVE HEART FAILURE

The symptoms and signs of congestive heart failure are listed in table 2. They fall into two groups according to whether the congestion is in the pulmonary circulation (left-sided failure) or in the systemic circulation (right-sided failure). The most important manifestation of failure of the left side of the heart is dyspnea, appearing either on slight exertion or—more typically—at rest. However, heart disease is not the only disorder which causes shortness of wind. This symptom when appearing on effort is commonly due to obesity, emphysema, bronchitis, bronchiectasis, anemia or almost any debilitating disease. However, in many instances dyspnea is accompanied by weakness and fatigability, and the patient's chief complaint is of the latter symptoms. It is only when there is heart disease, abnormality of the lungs or marked obesity that dyspnea is likely to occur with slight muscular effort in the absence of weakness and fatigue. Shortness of breath at rest may be due to a psychoneurotic state (which is commonly associated with sighing rather than with panting); it may be due to bronchial asthma, to abnormalities of the trachea or bronchi, to accumulations of fluid in the chest or to acute infection in the lungs. Most of these conditions can be readily differentiated from the dyspnea of heart disease by the presence or absence of the signs just mentioned which point toward heart disease.

Attacks of dyspnea, usually occurring at night, constitute one of the most important manifestations of failure of the left side of the heart. Such attacks are of two types: (a) cardiac asthma, which sets in after the subject has been soundly asleep and which has to be differentiated from seizures of dyspnea due to bronchial asthma or to rarer causes of respiratory obstruction, and (b) Cheyne-Stokes respiration, which usually appears just as the subject sinks into sleep. Periodic breathing may occur in patients with cerebral hemorrhage, pneumonia, uremia, advanced cerebral arteriosclerosis and the like. However, it rarely leads to severe subjective respiratory distress except when the patient has congestive failure.

TABLE 1.—The More Common Types of Heart Failure

Major Type	Chief Physiologic Disturbance	Subtypes	Comment
Forward failure	Inadequate tissue blood supply (especially to the brain)	Sudden death	Angina pectoris
		Cardiac syncope	Adams-Stokes disease
		Cardiac collapse *	Acute myocardial injury
			Extreme tachycardia
			Mechanical hindrance
Backward (congestive failure)	Engorgement of vascular bed (pulmonary, systemic or both)	Left-sided failure	Pulmonary congestion
		Right-sided failure	Systemic congestion

* The clinical picture is like that of surgical shock except for evidence of congestion—either pulmonary, systemic or both.

Since dyspnea is the most important clinical manifestation of failure of the left side of the heart, this symptom needs to be investigated carefully, not only by questioning the patient concerning his sensations but by observations of the breathing during and after exercise. The exercise selected should usually be one which is just severe enough to make a normal person slightly conscious of his breathing. If the physician will walk at a moderately rapid rate up two or three flights of stairs with the patient and compare his own

breathing with that of the patient, he will often obtain information which is a valuable supplement to the patient's statement with regard to his shortness of wind. This simple test is one of the most useful methods of examination of the heart, and it is even more important in persons with suspected angina pectoris than in patients with suspected heart failure.

TABLE 2.—The Important Clinical Manifestations of Congestive (Backward) Failure

I. Failure of left side of heart
Dyspnea
On exertion
Orthopnea
Cardiac asthma
Cheyne-Stokes respiration
Cough
Rales at lung bases
Diminished vital capacity
Prolonged pulmonary circulation time
Increased vascular shadows in lungs
II. Failure of right side of heart
Increased venous pressure and distended veins
Edema of dependent parts
Enlarged, tender liver
Cyanosis
Albuminuria
Prolonged peripheral circulation time

Coughing is a common symptom of failure of the left side of the heart. However, in this condition the dyspnea is usually predominant and the cough a secondary symptom. In bronchitis and many other diseases of the lungs the cough is more pronounced than the dyspnea. These rules admit of occasional exceptions, and one sometimes observes a troublesome cough—supposedly due to bronchitis—disappear completely following digitalization.

One of the errors commonly made in the diagnosis of heart failure is the assumption that the absence of rales in the lungs means that these organs are not congested. Actually, rales are a sign that the dyspnea has become severe enough to produce edema of the lungs, and in many cases a moderate degree of pulmonary congestion exists in the absence of rales.

Measurement of the vital capacity is a helpful procedure in the diagnosis of left-sided heart failure. In interpreting such measurements it should be remembered that normally the vital capacity is greater in men than in women, in the young than in the elderly, in thin persons than in fat persons, and that individuals who take considerable exercise usually have higher vital capacities than those who lead sedentary lives. It should likewise be borne in mind that many diseases other than those which affect the heart may reduce the vital capacity, common examples being emphysema and bronchiectasis. Because of these variables, a single measurement of the vital capacity is of relatively little value in the diagnosis of heart failure. However, repeated measurements are often quite helpful, especially when carried out before and after the use of therapeutic measures which have a beneficial effect in persons with congestive failure. A distinct rise in vital capacity following the administration of adequate doses of digitalis constitutes strong evidence that the decrease in vital capacity existing before the administration of the drug was the result of congestive heart failure. This simple procedure, coupled with an evaluation of the patient's statement with regard to the degree of dyspnea experienced on standardized effort before and after digitalis, constitutes one of the most helpful methods of diagnosing the mild degrees of pulmonary congestion in doubtful instances.

Among the other methods which are often of value in the diagnosis of failure of the left side of the heart are measurements of the pulmonary circulation time and study of the pulmonary vascular markings in the x-ray film.

The recognition of failure of the right side of the heart rarely presents difficulties if the failure is severe. The combination of marked edema of the lower part of the body, enlargement and tenderness of the liver in association with pronounced distention of the veins produces a characteristic picture. However, when these manifestations are quite mild, difficulties may arise. These difficulties can usually be overcome by attention to a few simple principles.

ence is not some arbitrary point on the chest wall but the posterior part of the vertebral column, which bears a fairly fixed relationship to the level of the auricle. The patient should lie on a flat table and the venous pressure should be measured as the vertical distance from this table to the point at which saline solution fails to descend into a needle in the antecubital vein. Measured in this way, the normal venous pressure is from 150 to 220 mm. of saline solution. Provided the subject has been at rest on the table for a number of minutes, is thoroughly relaxed, is not excited and is breathing quietly, a value of 250 mm. or more by this method represents an abnormally high venous pressure. However, such an elevation does not necessarily mean the

TABLE 3.—*The Differential Diagnosis of Failure of the Left Side of the Heart*

Condition Failure of left side of heart	Signs of Heart Disease +	Dyspnea			Cough	Sputum None, frothy (acute pulmonary edema) or blood (infarction)	Rales Moist	Pulmonary Circulation Time Prolonged
		Exertion ++	Orthopnea +	Paroxysmal +				
Obesity	0	+	0	0	0	0	0	Normal
Anemia	Systolic murmur, loud sounds	+	0	0	0	0	0	Rapid
Bronchitis, bronchiectasis	None or slight enlargement of right ventricle	+	±	+	+++	Abundant or thick and tenacious	Dry	Normal
Lung tumors	0	+	0	±	++	"Raspberry juice" or none	None or unilateral	Normal
Pneumonia and other severe infec- tions of lungs	0	++	0	0	+++	Rusty	Often unilateral or patchy	Normal

TABLE 4.—*The Differential Diagnosis of Failure of the Right Side of the Heart*

General Condition Failure of right side of heart	Specific Condition Any cause of heart dis- ease	Elevation of Venous Pressure		Anasarca		Enlarged Liver + (tender, smooth)	Cyanosis + (often absent)	Albumi- nuria +	Signs of Heart Disease +	Left- Sided Failure +
		Cubital +	Femoral +	Edema + (depend- ent)	Ascites + (often absent)					
Caval obstruction	Superior	+	0	Arms	0	0	Face, neck and arms	0	0	0
	Inferior	0	+	Legs	+ or 0	+ or 0	Legs and abdomen	+	0	0
Hypoproteinemia	Nephrosis	0	0	++	++	0	0	+++	0	0
	Nutritional (protein de- ficiency)	0	0	+	+	0	0	0	0	0
Portal obstruction	Liver disease	0	0	+	++	+	0	0	0	0
	Cirrhosis, portal thrombosis, etc.	0	+	+	++	Large or small	Abdomen only	±	0	0
Chronic peritonitis	Tuberculosis, carcinoma	0	+	+	++	Absent to marked	0	±	0	0

In evaluating the appearance of the veins one must remember that it is not the volume of blood in the veins but the pressure within these channels which is of importance in indicating failure of the right side of the heart. The vertical distance above the heart level at which the cervical veins collapse is therefore of more importance than the actual size of the vessels. Under normal conditions the cervical veins collapse at a point about 10 cm. (or less) above the auricular level. If the veins are distended at a point more than 15 cm. above the auricular level it is probable that the venous pressure is abnormally high, and such is certainly the case if these vessels are well filled 20 cm. or more above the heart level. In doubtful instances one should not be satisfied with the results of inspection but should measure the venous pressure. It has recently been shown by Burwell and his associates that for the purpose of such measurements the best point of refer-

ence is not some arbitrary point on the chest wall but the posterior part of the vertebral column, which bears a fairly fixed relationship to the level of the auricle. The patient should lie on a flat table and the venous pressure should be measured as the vertical distance from this table to the point at which saline solution fails to descend into a needle in the antecubital vein. Measured in this way, the normal venous pressure is from 150 to 220 mm. of saline solution. Provided the subject has been at rest on the table for a number of minutes, is thoroughly relaxed, is not excited and is breathing quietly, a value of 250 mm. or more by this method represents an abnormally high venous pressure. However, such an elevation does not necessarily mean the

presence of congestive heart failure, as it may be brought about by various conditions which increase the intrathoracic pressure, by disorders—such as aneurysms and mediastinal tumors—which compress the superior vena cava and by thrombosis of this vessel. Aside from congestive heart failure, the most common causes of increase in venous pressure are conditions, such as bronchial asthma, which interfere with the deflation of the lungs and which therefore elevate the intrathoracic pressure.

Although congestive failure is probably the most common cause of a significant degree of edema, it is by no means the only cause. Deficiency of the serum proteins due to inadequate protein intake (nutritional edema), to excessive loss (nephrosis) or to inadequate formation (certain diseases of the liver) may likewise cause general edema. Such patients are usually not dyspneic and hence lie flat in bed; the edema tends to

be more evenly distributed than of patients with heart disease, in whom orthopnea forces the patient to assume a position (sitting) which causes the greatest venous pressure to be exerted in the legs and abdomen, with a relatively small venous pressure in the face. Hence the patient with heart disease ordinarily has no edema of the face in comparison to the striking edema of the lower part of the body. However, this general rule admits of occasional exceptions, for in certain types of heart disease (tricuspid stenosis, constrictive pericarditis) there is usually little or no pulmonary congestion and therefore, since dyspnea is minimal, the patient may lie flat in bed and hence have edema of the face as well as of the lower parts.

The enlarged liver of congestive heart failure has to be differentiated from all other conditions that cause a large smooth liver. Such differentiation usually needs to be based on a consideration of the associated phenomena rather than on the physical signs concerned with the liver itself. In patients with right-sided heart failure of short duration and of progressive nature the liver is usually tender. However, if the enlargement has persisted for a considerable time the tenderness usually disappears. Occasionally the pain due to sudden enlargement of the liver resulting from heart failure may lead to a mistaken diagnosis of gallbladder disease.

Although cyanosis is not a constant feature of congestive heart failure, it occurs to some degree in many cases. It may be brought about by arterial anoxia as the result of pulmonary edema or emphysema, by distention of the small veins in the skin as the result of the increased venous pressure or by diminished circulation through the skin, especially when the heart failure is of sudden onset. The presence of cyanosis is therefore a suggestive sign of heart failure when the patient has other manifestations pointing toward it. The absence of cyanosis does not signify the absence of heart failure.

In tables 3 and 4 a summary is presented of certain points which are useful in differentiating heart failure from some of the more common conditions which may simulate it. The tables are not in any sense comprehensive but include only those conditions which are frequently encountered and which are especially likely to lead to confusion.

SUMMARY

There are several different types of heart failure, the most important of these being congestive heart failure. The diagnosis of this condition depends on finding evidence of heart disease plus evidence of congestion either in the pulmonary or in the systemic circuit. The most common important signs of heart disease are enlargement of the heart, diastolic murmurs and gallop rhythm. The clinical manifestations of congestion in the pulmonary bed consist of dyspnea (including orthopnea and paroxysmal dyspnea), cough, rales at the lung bases, diminution in vital capacity, prolongation of the circulation time and the appearance of increased vascular markings in the x-ray film. Failure of the left side of the heart is the most common type of congestive heart failure and usually precedes failure of the right side, which leads to edema, increase in venous pressure with distention of the veins, enlargement of the liver, cyanosis and albuminuria. No single sign of congestive heart failure is specific, as all the manifestations may at times be produced by other conditions. Hence the diagnosis cannot be made on the finding of any single phenomenon but rather must depend on a consideration of the entire clinical picture.

Therapeutics

THE THERAPY OF THE COOK COUNTY HOSPITAL

EDITED BY BERNARD FANTUS, M.D.

CHICAGO

NOTE.—In their elaboration, these articles were submitted to the members of the attending staff of the Cook County Hospital by the director of therapeutics, the late Dr. Bernard Fantus. The views expressed by various members are incorporated in the final draft for publication. When completed, the series will be published in book form.—Ed.

THE THERAPY OF BARBITURATE POISONING

IN COLLABORATION WITH DR. RICHARD KOHN RICHARDS
NORTH CHICAGO, ILL.

The patient who suffers from barbiturate poisoning usually arrives at the hospital in coma, with the reflexes and pupillary reactions retained or even exaggerated. The barbituric pupil is usually dilated with normal or slightly delayed pupillary reaction (and it is small and reactionless only in extreme cases); the pupil of morphine poisoning is generally small and becomes dilated only shortly before death. In case of barbiturate coma quite frequently a rhythmic widening and narrowing of the pupil (hippus) is observed. Presence of hippus makes the prognosis somewhat more favorable than if there is no reaction present.

A simple test for barbiturates in the urine which is approximately quantitative has been described by Koppányi, Murphy and Krop.¹

Newer tests which are more accurate and less time consuming than the isolation of the crystalline material have been developed. A method based on the color reaction with cobalt is described by Brundage and Gruber.² A good modification has been worked out by Delmonico.³

The fatal dose is, in general, from fifteen to thirty times the therapeutic dose. The dose of barbituric which is nearly always fatal is about 10 Gm., that of phenobarbital from 6 to 8 Gm. and that of dial about 2.4 Gm. The mortality rate may exceed 20 per cent. Symptoms of barbiturate poisoning generally continue for several days before death or recovery takes place.

When a patient is admitted to the hospital in the stage of coma, the following procedure should be carried out:

1. Evacuation of the stomach should be done, with the patient's head lower than the stomach (best carried out on the operating table to prevent aspiration of fluid overflowing from the stomach around the tube, with subsequent development of aspiration pneumonia). If trismus is present the duodenal tube should be passed through the nose. Lavage with Potassium Permanganate solution 1:5,000 may be useful against some barbiturates even when the poison has been taken many hours previously.

To clear unabsorbed poison from the bowel, sodium sulfate or sodium phosphate is preferable to magnesium sulfate, as reabsorption of magnesium during the coma might result in an increase of the depression and should be left in the stomach with Fluidextract of Cascara

Dr. Fantus died April 14, 1940.

1. Koppányi, T.; Murphy, W. S., and Krop, S.: Proc. Soc. Exper. Biol. & Med. **30**: 542 (Jan.) 1933.

2. Brundage, J. T., and Gruber, C. M.: Determination of Barbiturates in the Blood and Urine, J. Pharmacol. & Exper. Therap. **59**: 379-392 (April) 1937.

3. Delmonico, E. J.: Tests for Derivation of Barbituric Acid, Proc. Staff Meet., Mayo Clin. **14**: 109 (Feb. 15) 1939.

Sagrada (16 cc.). The tube should be left in place. If no bowel movement is secured, this should be followed in a few hours by 30 cc. of Caster Oil. Enemas may be required in addition, and these might well consist of hot strong black coffee, any quantity of which retained also serves as an antagonist.

2. Postural drainage should be maintained continuously. The foot end of the bed is elevated to tilt the bed from 15 to 20 degrees, the patient's feet being tied to the end of the bed if necessary and the patient's head turned to the side. Secretions accumulating in the pharynx should be removed by suction. Insertion of an airway to prevent falling back of the tongue is advisable in any deep coma in addition to periodic removal of accumulated secretion in the pharynx. If the patient is cyanotic, and many of them are, oxygen should be administered by a nasal catheter. If the respiration is shallow, the administration of a few whiffs of carbon dioxide every half hour improves respiration and has a general analeptic effect.

3. Feeding should be done through the stomach tube at intervals of every four hours, with two cups of not excessively hot strong coffee with some milk. When a feeding is due, the stomach should always be evacuated of its contents before injection of the feeding so as to avoid overdistention of the stomach and possible overflow around the tube and aspiration into the lungs. One might be somewhat hesitant about feeding a patient in deep coma by stomach tube, since the postural drainage position in the stage of deepest depression may lead to regurgitation. Oral feeding should not be started before the vegetative reflexes are reestablished. In the meantime, parenteral fluid administration, dextrose with saline solution, should be given with judgment. Particularly, the development of a pulmonary edema should warn against a careless or excessive administration of fluids. Intravenous injections of hypertonic solutions, i. e., 25 per cent dextrose, are often helpful. What frequently appears to be pulmonary edema after the patient is admitted are really rales of accumulated mucus, which disappear if the patient is properly nursed.

It is a peculiar observation that patients with severe barbiturate poisoning soon start to have a high temperature even if no pulmonary complications are demonstrable.

4. An important part of the therapy consists of liberal administration of analeptic drugs, i. e., stimulants which counteract the depressant action of the barbiturates on the central nervous system. At present it seems that sufficient evidence has been collected to warrant the recommendations of picrotoxin as the most powerful stimulant in all cases of severe barbiturate poisoning. The drug should be given in doses of from 6 to 12 mg. intravenously, depending on the degree of coma. It is used as a 0.3 per cent solution, each cubic centimeter containing 3 mg. An interval of fifteen minutes should pass between two injections in order to account for the latent period inherent in this drug. Improvement of respiration, slight movements and moaning are the first signs of favorable response. In cases of severe poisoning, large doses have been given even before a diminution of the anesthesia is noticed. Slight twitchings of the facial muscles are a sign that the optimum effect of the drug is about attained. Under no circumstances should one try to induce complete awakening, since this might lead to convulsions. The long acting barbiturates are harder to overcome than the short acting group. Picrotoxin treatment should not be started without

having a soluble-barbiturate such as, for instance, pentobarbital sodium, pentothal sodium or amytal readily available for intravenous injection in case severe convulsions develop. It is wise to stay sufficiently below the convulsion level and to be satisfied with improvement in respiration, restoration of the cough and swallowing reflex and production of spontaneous movements. All these factors start to prevent stasis and pulmonary complications which are the main danger in subacute barbiturate poisoning. If such a response has been produced, one may continue to give the drug at one half or one hour intervals intramuscularly. In case the coma deepens again, more frequent medication has to be resorted to.

Metrazol is a stimulant almost as powerful as picrotoxin but does not seem to be quite as prolonged in its action clinically. It has no latent period, and the maximum effect starts almost immediately after injection. Several cubic centimeters of the 10 per cent solution should be injected intravenously at intervals until the desired effect is reached. Afterward, intramuscular injection can be resorted to.

Nikethamide, which is a good respiratory stimulant, is definitely inferior to picrotoxin or metrazol as an analeptic in stages of severe barbiturate depression. Strychnine Nitrate 2 mg. hypodermically every hour or two has been given until there is increased reflex excitability and this procedure is still recommended by several authors. Since strychnine, however, has primarily a spinal reflex action, it seems inferior to either picrotoxin or metrazol. Caffeine with Sodium Benzoate is not a very strong stimulant but it can be given in repeated doses of 0.5 Gm. intramuscularly because of its favorable effect on diuresis and the heart muscle.

5. Elimination should be cautiously assisted by 5 per cent dextrose phleboclysis to maintain free secretion of urine, but development of pulmonary edema should be watched for. Diuresis may be helped by a xanthine diuretic, e. g. aminophylline (Theophylline with Ethylene Diamine) in doses of 0.25 Gm. in 10 cc. of water, which may be given in the dextrose infusion, possibly every eight hours. Catheterization should be done every four to ten hours.

6. The body temperature should be kept from falling below the normal level by the application of external heat with great care to prevent burns. In conditions of subnormal temperature, heat is the greatest of all stimulants. It is a requisite to permit medicinal stimulants to act properly, and it may prevent the lowering of resistance that favors the development of pneumonia.

7. Artificial respiration with inhalation of oxygen should be instituted on the appearance of marked enfeeblement of respirations. Death from primary paralysis of respiration is, however, very rare. Death from primary failure of circulation occurs only in cases in which the heart is diseased.

In a serious case in which the blood pressure not infrequently drops to 80 mm. systolic, energetic treatment of the circulation appears desirable. One may give these patients at once 0.25 mg. of strophanthin-K intravenously and repeat this dose at twelve to twenty-four hour intervals for the first day or two if necessary. Ephedrine is also useful in raising the blood pressure. The injection of 1 cc. of solution of pituitary has been very helpful in imminent pulmonary edema. It raises the blood pressure and tightens the capillaries.⁴ Digital-

4. Poulsson, L. T.: Ueber die exsudationshemmende Wirkung des Pituitrins, Arch. f. exper. Path. u. Pharmacol. 120: 120, 1927. Tainter, M. L.: Comparative Antiedemic Efficiency of Epinephrine and Related Amines and Pituitary in Experimental Edemas, J. Pharmacol. & Exper. Therap. 33: 129 (June) 1928.

ization should, if possible, precede the solution of posterior pituitary in order to insure sufficient reserve power for the heart to overcome the increased resistance. It is advisable in cases of deep coma to make a spinal puncture and to determine the spinal pressure. The pressure should be reduced in case it is elevated, since cerebral edema is one of the most serious complications of barbiturate poisoning. Intravenous injection of sucrose or, better, sorbitol, reduces intracranial pressure.

STAGE OF REACTION

Usually by the end of the first day the temperature rises, respiration becomes embarrassed, foci of pulmonary edema, congestion or consolidation develop, the blood pressure falls and the pulse becomes enfeebled. The pulmonary sequelae are probably in most instances the result of the general vasoparesis with or without subsequent infection. Nevertheless, everything should be done to prevent the possibility of a suspicion that they are due to aspiration or to chilling. The treatment is that of pneumonia (q. v.).

Great tendency to decubitus (q. v.), also due to vascular paresis, requires special precautionary measures.

Constant nursing care is imperative to give these desperately sick and helpless patients their best chance for survival.

Special Article

CONFERENCES ON THERAPY

MANAGEMENT OF DIABETIC EMERGENCIES:

II. TREATMENT OF SURGICAL PATIENTS AND CHILDREN

NOTE.—These are actual reports, slightly edited, of conferences by the members of the Departments of Pharmacology and of Medicine of Cornell University Medical College and the New York Hospital, with the collaboration of other departments. The questions and discussions involve participation by members of the staff of the college and hospital, students and visitors.

DR. EUGENE F. DU BOIS: We are going to continue the discussion of diabetes with a contribution from Dr. Conway, who will discuss the surgical aspects.

SURGICAL ASPECTS OF DIABETES

DR. HERBERT CONWAY: In planning a surgical procedure for the diabetic patient, the exact state of the diabetes must be taken into consideration as a basis for the management of the preoperative treatment, the selection of the anesthetic and the type of operation. The diabetic patient, even though his disease is under medical control, must undergo greater surgical hazard than the nondiabetic person. There is a factor, which may be referred to as x , which operates against the welfare of the diabetic subject. It manifests itself in many ways. Wounds heal slowly. Tissues are non-resistant to infection. Pus dissects easily along fascial planes. Micro-organisms cause gangrenous sloughs in the tissues. Postoperative mortality rates for these patients are higher than for the nondiabetic. Surgery of the gallbladder, which is attended with an operative mortality of from 1 to 2 per cent, carries a mortality rate of from 6 to 7 per cent among the diabetic. Acute appendicitis shows greater virulence. Carbuncles, always serious, not uncommonly result fatally in the early postoperative period.

Gangrene of an extremity in association with diabetes is probably the most important complication with which

the surgeon deals in the diabetic patient. Of a total of 1,333 patients admitted to the New York Hospital as diabetic during the past seven years, fifty-six, or 4.2 per cent, had gangrene of an extremity. In nineteen of these cases mid thigh amputation was performed with nine deaths, a mortality of 47.4 per cent. In the same period (1932-1939) twenty-six patients who had arteriosclerotic gangrene with infection were subjected to mid thigh amputation with only four deaths, a mortality of 15.3 per cent. The level of amputation for diabetic gangrene is determined after consideration of the extent of the infection, the state of the patient and the efficiency of the circulation. There are no completely satisfactory tests by which the ideal level for amputation can be determined. The saline wheal test (Stern), the histamine test (de Takats), nerve block (Morton and Scott), arteriography and the tourniquet test (Brooks) have not been found to be wholly reliable guides. There are, however, certain general rules which guide the surgeon. It is believed that simple amputation of the toe will be successful if the dorsalis pedis pulse is present, if there has been little pain and if the infection has not spread over the dorsum of the foot. Amputations through the foot have not been advised for the diabetic because the efficiency of the circulation at this level is not ideal. Amputations below the knee are not done unless there is evidence that the patient is of the type who can accept a prosthesis. Amputation should not be done below the knee if a pulsation cannot be palpated in the popliteal artery. Amputation through the knee joint (Gritti-Stokes) is not recommended for diabetic patients because the success of the amputation depends on the use of a flap of soft tissue in the region of the patella, a circulatory burden which is too great for the extremity of a diabetic person. In cases in which simple amputation of the toe is not successful, it has been necessary commonly to resort to the circular mid thigh amputation.

DR. DU BOIS: There is nothing more important for the medical man than a knowledge of what surgery can offer in diabetes, and judgment is extremely difficult.

DR. EPHRAIM SHORR: I think it is of considerable importance for medical men to know what to do, if possible, about the prevention of surgical complications, and also what conservative measures are likely to prove of help.

DR. CONWAY: Conservative treatment consists in the application of dressings which should be dry. We usually put the patient in bed, with the leg at the level of the heart so that the circulation may be maintained with minimum difficulty. A cradle with electric lamps increases the vasodilatation, and moist dressings are avoided because they may activate the infection and convert what might have been dry gangrene into wet gangrene. We believe that forcing of fluids is essential in order to dilute the circulating stream of blood and diminish its viscosity. If there is no infection, the leg can be put into a glass boot in which alternate suction and pressure are applied. That is, we believe, a helpful method of arresting the advance of gangrene. But if infection is present, that device should not be used because it may promote the extension of the infection along the lymphatic channels. Minor incisions to drain accumulations of pus, or excision of an area of slough, may be necessary.

DR. SHORR: What about preventive measures? What do you tell diabetic patients, for instance, about their shoes, the care of their feet, the selection of their socks and so on?

DR. CONWAY: Most of this preventive work is carried out before they come under our observation. All of our nineteen patients who were subjected to mid-thigh amputation were admitted to the hospital in a state of emergency and had not had previous care. We believe, as Dr. Shorr does, that the condition is probably preventable. Care of toe nails is tremendously important. Ingrown toe nails should not be allowed to develop. The patients should be taught to cut their nails transversely and to pack cotton under them to prevent their growing into the epithelial surface. They are cautioned about injuring their legs, about the danger of cutting them, about being around gymnasiums or places where they might contract athlete's foot. If they contract athlete's foot, they are immediately put under treatment to prevent abrasion of the skin, which might provide a port of entry for infection. Frequently we advise shoes a size larger than they would ordinarily need, being careful that the foot does not rub in the shoe. We often advise heavy woolen socks to keep the lower extremities warm and promote vasodilatation. Some clinicians recommend a soft rabbit's fur lining for a specially made shoe. The other measures are the ones which are instituted in arteriosclerosis generally, involving exercises of the Buerger-Allen type, in which the patient puts his legs and feet through regular motions. Inunctions of the skin with hydrous wool fat, cottonseed oil or theobroma oil are of value in softening the skin and preventing the shiny tight surface which promotes abrasions.

DR. HARRY GOLD: How has insulin therapy changed the mortality in the class of patients discussed?

DR. CONWAY: All of our patients are managed in this institution by the combined efforts of the medical consultants and ourselves, and insulin therapy is instituted from the outset. The older surgical records show that this condition was usually fatal before the advent of insulin.

DR. DU BOIS: Dr. Tolstoi, have you seen gangrene develop in patients under what would be considered good control?

DR. EDWARD TOLSTOI: I have. I was going to ask Dr. Conway whether there is such an entity as "diabetic" gangrene, whether the entire process is not vascular, because we do not see it in young people at all even in severe diabetes. In young patients who are severely diabetic this particular lesion is conspicuously absent. From my observations two types of diabetic persons are prone to this complication: One is the individual in the fourth to the fifth decade who has arteriolar disease. The small vessels are involved. In this type of infection wet gangrene commonly occurs. There is no occlusion of a major vessel causing the extremity to shrivel and dry up. In the older group in the sixth to the eighth decade the major vascular accidents occur and with them dry gangrene. All these gangrenous lesions are associated with vascular disease and not so much with the diabetes.

DR. GOLD: Isn't it a fact, however, that vascular degeneration develops in the presence of diabetes rather rapidly and to a degree that is out of all proportion to that seen in similar groups without diabetes? In that sense wouldn't the term diabetic gangrene apply?

DR. TOLSTOI: We have limited our study to younger diabetic groups, taking roentgenograms of their leg vessels and studying their blood cholesterol. We have used all the criteria proposed by the group who postulate that diabetes disposes to arteriosclerosis. We have

watched these severely diabetic groups now for a period of seven years, taking x-ray plates at intervals of six months, and we have been unable to note any calcific lesions in their vessels. On the other hand, I recall a diabetic woman 22 years of age whose symptoms were only two months old as far as we could ascertain, and the roentgenograms of her tibial vessels showed marked calcific deposits. With such facts it is difficult for me to accept the postulate that diabetes predisposes to vascular sclerosis. That view may have been tenable in the preinsulin era, but it certainly should be challenged today, to stimulate further studies in that direction. I wonder whether the study of a large control group under 40 might not lead to a reconsideration of the existing hypotheses. Enklewitz, of the Montefiore Hospital in this city, studied this question about five years ago. He questioned the role played by diabetes in the causation of atherosclerosis.

I would prefer to call the condition gangrene in the diabetic rather than diabetic gangrene. It may appear academic, but I do think there is a pathologic distinction.

DR. DU BOIS: I was particularly interested in this so-called α factor that Dr. Conway emphasized. I think it is real. Every one knows that diabetic patients do badly, but what is this factor? I don't quite believe it is high blood sugar, tissue damage or faulty metabolism. Does it persist after the diabetes has been under control? If a man has been severely diabetic and is brought under adequate control for six months or so, is that so-called α factor still present?

DR. CONWAY: I recall one case in which I thought the α factor had vanished because the patient went through primary healing after a surgical operation, but I believe it is present to some extent even after adequate control. I do not think that insulin therapy corrects everything in the diabetic patient as far as major trauma or surgical operation is concerned.

DR. DU BOIS: Can we get some dissenting opinion on that?

DR. TOLSTOI: I should like to voice a contrary opinion. I believe that the view that healing is delayed in the diabetic is a carry-over from the old régime. Dehydration was outstanding at that time. If the diabetic patient is hydrated and no infection sets in, healing will take place. Dr. Conway was good enough to do one or two surgical amputations for us on patients well hydrated and he expressed surprise at the satisfactory healing of the wound, though the patients were quite old. Sufficient fluid is the deciding factor.

DR. SHORR: I should like to suggest infection as probably the major difference between those showing an adequate response and those showing no response to treatment. Once infection has entered the picture, it has been our general experience that treatment of the diabetes is much less successful.

TREATMENT OF DIABETES IN CHILDHOOD

DR. DU BOIS: Dr. Harrison, will you discuss the special problems in connection with children?

DR. HAROLD E. HARRISON: The principles for the treatment of diabetes in childhood do not differ from those in adult life, but there are certain idiosyncrasies found in the younger age group which are worth mentioning. One factor is the greater incidence of diabetic acidosis among children. Diabetic children may come into the hospital three or four times a year with diabetic acidosis even though they have been apparently competently handled on the outside and seem to have been

doing fairly well in all respects. A minor infection, a dietary indiscretion or some apparently unknown factor may precipitate diabetic acidosis. Children are also more susceptible to hypoglycemic shock than adults. Frequent mild insulin reactions may occur if an attempt is made to regulate the diabetes so that the urine is practically free from dextrose.

The onset of diabetic acidosis may be sudden. Usually among the first symptoms of importance are nausea and vomiting, always a danger sign in the child. A mistake commonly made is the interruption of the administration of insulin as soon as the child stops eating or becomes nauseated and vomits, in the belief that it is dangerous to give insulin unless the child can take food. As a result the acidosis progresses and becomes more severe than would have been the case if insulin had been continued and given in small repeated doses, the urine being examined for dextrose to avoid overdosage and hypoglycemic shock. Children with diabetic acidosis may become extremely dehydrated. The dehydration is in part due to loss of water and electrolytes in the urine during the diuresis associated with glycosuria, and in part to vomiting. When a diabetic child begins to vomit it is frequently impossible to give fluids by mouth until the diabetic acidosis is under control. Fluids by mouth merely aggravate the vomiting. It is therefore advisable to stop all administration by mouth and to give all fluids parenterally. Because of the severe dehydration which occurs, the administration of adequate amounts of saline solution is important. In a rather large series of children with diabetic acidosis Hartmann found that the plasma volume of some patients was reduced to almost half of the normal value. This indicates an extreme state of dehydration. The use of insulin and dextrose has already been discussed adequately by Dr. Tolstoi, and their use in the diabetic child is the same as in the adult except that the dosage is regulated according to the size of the child and the severity of the diabetes.

It is commonly said that circulatory failure in the child does not occur as often as in the adult, who may have vascular disease as well as diabetes. Nevertheless, with marked dehydration circulatory failure may occur as a result of the depletion of the plasma volume. Large amounts of salt and dextrose solution given to an extremely dehydrated child with circulatory failure often fail to raise the blood pressure permanently. In those patients the use of blood transfusions may be a life-saving measure. If blood transfusions are not given promptly, the blood pressure may abruptly drop further, and then no treatment may be of any avail. Death usually occurs in children with diabetic acidosis as the result of circulatory collapse. Even severe acidosis should not often cause death, if the diabetic child is properly treated. Joslin reported seventy cases of diabetic acidosis in children with but one death. Hartmann reported a series of ninety cases of diabetic acidosis in childhood with five deaths. Most clinics have had similar experiences with children with diabetic acidosis properly handled. Nevertheless, many deaths do occur and could probably be avoided by the use of modern methods of therapy.

Finally, something should be said about the use of alkali in the treatment of diabetic acidosis. Ordinarily it is not necessary to use alkali. If adequate amounts of saline solution are given, if renal function is normal and if the circulation can be maintained, readjustments of the serum electrolyte picture will take place without the use of alkali. However, in cases of severe acidosis

or when renal insufficiency is present, as it may well be in children with marked diabetic acidosis, administration of alkali restores the serum electrolytes to normal more rapidly than saline solution alone.

Hartmann has advocated the use of sodium lactate. He considers it preferable to sodium bicarbonate for two reasons: The sodium lactate is a more convenient solution to give parenterally. Secondly, it is only slowly converted into sodium bicarbonate, and he believes that there is no danger of alkalosis of any clinical importance through the use of sodium lactate. Darrow has used a solution of sodium chloride and sodium bicarbonate which can be given intravenously when required, and a mixture of this sort seems logical. However, these are refinements of technic. In most cases that one encounters they are not necessary if ample amounts of sodium chloride and dextrose solution or transfusions are given. The danger, of course, of the excessive use of sodium bicarbonate is that as the ketone bodies are oxidized there is an excess of base in the body and finally alkalosis may result. This can be avoided by a careful study of the patient and by the use of alkali in only moderate amounts.

STUDENT: In the adult it is customary to count on 2 Gm. of dextrose being oxidized by each unit of insulin. Is that ratio used to calculate insulin doses for children?

DR. HARRISON: That same ratio can be used for children. However, the value is a gross approximation only, and after the diabetic acidosis begins to improve 1 unit of insulin may oxidize much more than 2 Gm. of dextrose. If one were to use that value all along one might produce hypoglycemic reactions in the child. As the diabetic acidosis subsides the insulin apparently becomes more effective, and therefore much more carbohydrate should be given to cover the insulin dosage.

STUDENT: Are the reactions of the child more labile?

DR. HARRISON: Yes. The child is apt to have hypoglycemic reactions more readily than the adult, and the blood sugar may fluctuate more widely.

DR. DU BOIS: During infection or in diabetic coma how many units do you have to give to secure the oxidation of 1 Gm. of dextrose?

DR. HARRISON: That cannot be answered with precision. It is our experience that 100 units of insulin may sometimes be given without any apparent effect on the blood sugar for many hours.

DR. DU BOIS: Does that apply also to adults?

DR. TOLSTOI: Yes.

DR. CONWAY: How often do you see a death from diabetic coma in a child?

DR. HARRISON: In the large series that Hartmann reported the mortality rate was 5 per cent, and he felt that that rate could be lowered with his present methods of therapy. His series included patients observed during the past eight years.

DR. CONWAY: Does that apply here?

DR. HARRISON: I don't believe we have had any such deaths in this hospital during the past seven years.

DR. SHORR: Does the greater lability of the child's blood sugar level make the use of protamine zinc insulin more hazardous than in the adult?

DR. HARRISON: I don't think so, although it did seem at first that with protamine zinc insulin we observed extreme hypoglycemic reactions. Patients were found in comatose states in the morning, and it was very difficult to get them out of shock. However, now that

we do not attempt to get the urine free from dextrose, protamine zinc insulin can be used for children without any great hazards.

DR. SHORR: Proving helpful?

DR. HARRISON: Proving helpful in the elimination of multiple doses of insulin. It is more convenient in handling the diabetic child.

DR. ADE T. MILHORAT: Do you use gastric lavage for children who are vomiting and nauseated?

DR. HARRISON: It is an old pediatric custom to use gastric lavage when there is repeated vomiting, probably on the theory that in these children the stomach is dilated and filled with accumulated products which may irritate the mucosa and that their removal may help to allay the nausea and vomiting. Gastric lavage is done in such cases, and sometimes the children seem to stop vomiting immediately afterward. However, most of the time we discontinue fluids by mouth and do not resort to gastric lavage.

DR. VINCENT DU VIGNEAUD: How many cases were treated in Hartmann's series?

DR. HARRISON: Ninety cases.

DR. DU VIGNEAUD: With what mortality?

DR. HARRISON: There were five deaths in that series.

DR. DU VIGNEAUD: Was that broken down into the types of death? Were the patients all actually in acidosis?

DR. HARRISON: They all had severe acidosis. Two of the deaths were thought to be due to pneumonia, but the other three were apparently due to acidosis unsuccessfully treated.

DR. DU VIGNEAUD: I was wondering whether the patients died in acidosis or alkalosis?

DR. HARRISON: None of Hartmann's patients died in alkalosis.

DR. DU VIGNEAUD: We have heard much about the dangers of sodium bicarbonate therapy as compared with sodium chloride therapy, and I was wondering just how real this danger of alkalosis from sodium bicarbonate is.

DR. HARRISON: It is perhaps exaggerated. A chemical alkalosis may be produced in the sense that the plasma bicarbonate may be raised above normal, but clinically there may be no symptoms.

DR. DU BOIS: As to the various therapeutic agents that are mentioned as dangerous, such as insulin, protamine zinc insulin and bicarbonate, isn't it true that they are really quite safe when used intelligently?

DR. GOLD: Dr. Tolstoi regards a properly controlled diabetic patient as one who has no symptoms, who maintains an adequate body weight and who does not show acetone in the urine, although there may be a high blood sugar and the patient may be spilling a good deal of sugar in the urine.

According to the view presented by Dr. Shorr, diabetes represents an endocrine imbalance. The hyperglycemia and glycosuria are some of the indications of its presence. Even though they are in themselves not injurious, they nevertheless do reveal a state of metabolic imbalance which may involve injurious factors as yet unknown. In the present state of our ignorance, therefore, would it not be wiser to attempt to restore the balance even to the point of a normal blood sugar where feasible, in the hope of correcting possible disturbances in the metabolism of the diabetic which are

not revealed by present methods? That would not be necessary, of course, if we were quite certain that progressive deterioration was not going on even while body weight was maintained and the patient was free from symptoms and acetone in the urine. But are we quite sure? I recall that we had arrived at no positive decision regarding the question raised by Dr. Du Bois as to whether the α factor persists in the so-called adequately controlled patient.

By way of illustration, if a patient is discovered to have diabetes with hyperglycemia and glycosuria, quite accidentally, as in a routine examination, and if he qualifies under Dr. Tolstoi's criteria for the well controlled diabetic patient, should one proceed to treat him only by repeated examinations to discover any change in his condition that might take place or should one do something more about it? I think that at the present time most doctors would proceed to give him some sort of diet and insulin if necessary, sufficient to control the glycosuria as far as possible.

DR. TOLSTOI: I would treat the patient as having mild diabetes. My final decision would, of course, be determined by what I learned about the patient after a period of observation. However, at the beginning I would suggest that he be given one dose of 20 units of protamine zinc insulin and put him on a liberal diet. Although he may not need the insulin at present, it would afford him some protection, since long experience has shown that the untreated diabetic patient tends to progress to ketosis and coma. Having afforded him this protection with protamine zinc insulin, I would be little concerned about the level of his blood sugar and the extent of his glycosuria.

DR. SHORR: We know little about what the possibilities in diabetes are; the cautious treatment recommended by Dr. Tolstoi is the safer one at present.

SUMMARY

DR. DU BOIS: Would you be willing to bring together the points outstanding in this conference, Dr. Gold?

DR. GOLD: We have considered today first the special problems of surgery in the diabetic. The experience here at New York Hospital illustrates the well known susceptibility of the diabetic to infections and the danger of infection when it occurs in such patients. The proper surgical procedure in gangrene of the extremity is a matter of skilled surgical judgment to which few fixed rules can be applied. We have also had an account of the application of some of the more conservative measures both during gangrene and for prophylaxis.

Insulin has reduced considerably the mortality of these patients, although its use has not altogether eliminated the complications. It is interesting to note that the role of diabetes in the causation of vascular degeneration, a matter which has been quite generally accepted, is now being subjected to new scrutiny and doubt. Adequate control of the diabetic as we now know it still seems to leave them deficient and less able to meet the situation in infection and surgery, although dehydration may be the chief cause of the trouble and these patients may encounter no difficulty if abundant fluids are administered.

In diabetes in children, greater difficulties seem to exist in the maintenance of a balanced state. Acidosis is more frequent. Again, the use of abundant fluids with sugar and salt is the most important measure. Alkalis, while not essential, restore serum reticulocytes more rapidly than saline solution alone.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.
PAUL NICHOLAS LEECH, Secretary.

PRESENT STATUS OF INJECTION TREATMENT OF HERNIA

In September 1936 the Council on Pharmacy and Chemistry¹ published a report on the injection treatment of hernia based on the replies to a questionnaire which had been addressed to a selected list of hospitals throughout the country. The questionnaire sought information particularly as to the extent of this practice, its safety and effectiveness, the incidence of unfavorable complications, and the nature of such complications. After consideration of the replies the Council concluded that, although there are cases in which this treatment is applicable and effective, nevertheless it should be borne in mind that the attempted cure of hernia by the application of the method of adhesive inflammation is not new; that it had failed to establish itself as a routine method for such treatment and was still in an early experimental stage; further, that physicians who practiced this method should realize the dangers from an ethical, a legal and a financial point of view.

To keep the Council's information up to date on this subject, the same questionnaire was again addressed to those hospitals which formerly replied. The questionnaire appears at the end of this report.

In reply to the inquiry whether or not the injection method is practiced, affirmative replies have been received from the same hospitals² which formerly stated that they used the method, except for one hospital which has now abandoned the method. The number of hospitals stating that they do not use the method remains the same as in the first tabulation; more hospitals seem to think the method is safe than unsafe, and more consider it ineffective than effective: in most cases the reply has been "effective only in selected cases." This would seem to agree with the consensus of the former report. In the 1936 report, it was stated:

Replies, which were received from most of the institutions addressed, indicated that the method is not used in the majority of the hospitals consulted and that it is considered safe and effective by those using it, although many qualified their opinion as to safety and effectiveness by specifying careful selection of cases. Several unfavorable complications were recorded, including mild infections, the development of fibrous masses of cutaneous tissue, and failure of the method to correct the hernia. In addition, there were some instances of painful scarring, occasional cases of swelling of the testis, and a few instances of subsequent impotence. In two cases, gangrene followed the use of the method.

Replies to the second questionnaire include reports of induration of the spermatic cord, atrophy of the testicle, numbness of the leg, edema of the leg, severe pain at times, slight symptoms of shock, localized peritonitis, impotence and recurrence of hernia. One hospital also reports the observation of a number of complications which resulted from the use of too strong solutions and the use of proper solutions in too great quantities. This hospital also reports the observation of several sloughs resulting from the solution's being injected into the subcutaneous fat instead of beneath the fascia.

As before, several hospitals report surgical operations on some patients who had been formerly treated by the injection method.

The solutions recently reported as being used include a mixture of oil of thuja, phenol and alcohol; sodium linoleate, sodium psylliate; tannic acid, and preparations of a proprietary character.

As indicated in the previous report, opinions vary as to the number of cases treated by this method in comparison to those treated surgically, but most of the hospitals now using the method report a rather low percentage of cases in which injections are given, such as "one injection to twenty surgical," "less than 50 per cent"; "5 to 10 per cent of those operated"; "8-10 per cent of cases subjected to this form of treatment"; "estimate it one to thirty-five"; "about 90 per cent [injection]"; "ten surgical to one injection." One hospital reports

that the "majority of cases presenting suitable indication (indirect inguinal hernia with small defect) are treated by injection method."

The consensus expressed by comments in reply to the last question indicate that one hospital has abandoned the injection treatment of hernia since the first questionnaire was reported, and others have narrowed its application to a smaller number of cases. Many hospitals concur in the opinion that this method is suitable only for small reducible indirect inguinal hernias. In general the importance of using careful technic, relatively nonirritating solutions and adequate truss support is indicated. Other hospitals indicate that surgical repair is the method of choice, the injection treatment being reserved for those cases suited to this method in which patients could not or would not undergo surgical operation. In some instances evaluation of the injection method is withheld because of inadequate follow-up or insufficient lapse of time. Cooperation of the patient in the matter of truss wearing is considered an important factor in success. In those hospitals not employing the injection method for hernia (about 65 per cent of those consulted) various reasons are given: Its original use has fallen into disrepute over a period of years and abandonment of its employment as a regular procedure is evidence that the method has no permanent value; it was previously abandoned because it failed to give useful results; scar tissue, whatever the origin, is a weak tissue, non-resistant to tension; the method is unestablished and opens the field of hernia treatment to incompetents, and the method is considered unsafe or unsatisfactory.

A review of the literature² since publication of the last report reveals that the weight of evidence is preponderantly in favor of acceptance of the injection method of treatment of hernia in carefully selected cases. In general most observers agree that

2. Berne, C. J.: Fatalities Following Injection Treatment of Hernia, *J. A. M. A.* **110**: 1812 (May 28) 1938.
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- Harris, F. I., and White, A. S.: Evaluation of the Injection Treatment of Hernia: Statistical and Analytic Study, *J. A. M. A.* **111**: 2009 (Nov. 26) 1938.
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1. Injection Treatment of Hernia, *J. A. M. A.* **107**: 1053 (Sept. 26) 1936.

the injection treatment should not supplant surgery and, except in certain cases, does not offer as favorable a permanent result as the latter. Attempts to evaluate the two methods of treatment are frustrated by the lack of adequate follow-up records, with the additional difficulty that injection treatment has not been in use for sufficient time to permit accurate comparison. This is most frequently given as the explanation for a high percentage of cures with the injection method as compared to surgery. Percentages of failures or recurrences are unsuited for comparison for the same reason. Another difficulty is the matter of clinical decision whether or not recurrent bulging or impulse at the hernial site is evidence of insufficient number of injections or true failure of the method. The necessity for adequate follow-up is emphasized by many advocates of the injection treatment. Adherents of the surgical method point out that comparison of only eight to ten years' experience in the injection method with the much longer experience in surgical treatment is illogical and inconclusive.

Most observers indicate belief that the percentage of failures with the injection method will increase as adequate follow-up studies are reported. The majority state that they have observed no serious complications from hernias treated by the injection method and are generally agreed that relatively nonirritating solutions in skilled hands may be employed for certain cases with less potential danger than that of surgery. The criteria for safe and successful use of the injection method are given by various observers as follows:

1. Selection of Cases. Thin, young adults with good musculature. (Obese or aged individuals with atonic or atrophic supporting tissues are not suitable.)
2. Type of Hernia. Recent, small, reducible, indirect inguinal hernia with external inguinal ring not over 3 cm. in diameter. (Scrotal, direct inguinal, femoral, umbilical, ventral and incisional hernias are unsuitable. Sliding hernia associated with undescended testis and incarcerated hernias are contraindications.)
3. Truss Fitting. Skilled, adequate truss-maintained reduction before, between and after injections. (Incompletely or inadequately maintained reduction may occur with improper fitting or uncooperative patients.)
4. Injection Technic. Knowledge of inguinal anatomy and skill during injection are fundamental. (Surgical asepsis is, of course, imperative.)
5. Choice of Solution. Sterile, nontoxic fibrous tissue-stimulating, non-irritating solution is ideal. The fatty acid (soap) solutions approach nearest to these criteria. (Powerful sclerosing solutions are to be avoided and are believed responsible for many complications.)
6. Follow-Up. Repeated examination for periods of from six months to three years is necessary to determine length of treatment and period of truss wearing required for cure. (Inadequate treatment and truss support blamed for failures.)

After due consideration of the second hospital survey and the reports in the recent literature, the Council voted to adopt this report to reaffirm its previous opinion that the injection method of treating hernia may not be recognized for general use and should be employed only by those with special experience and with full cognizance of the dangers involved in the use of such solutions. The Council now concurs in the opinion that the method involves less danger of serious complications than surgery when employed only in selected cases of hernia by those skilled in the injection of suitable standardized solutions of known composition and action. The Council is not, however, willing to recognize any such solutions for New and Nonofficial Remedies until sufficient follow-up experience in their application has been gained to establish the success of the injection method of treatment. Present evidence indicates that better types of solution are to be desired.

In addition to the complications noted from the hospital surveys, the literature reveals case reports of death following perforation of the bowel from accidental intraperitoneal introduction of the needle, intestinal obstruction due to adhesions from inadvertent intraperitoneal injection or strangulation from failure to maintain reduction, perirectal abscess, fecal fistula and thrombosis of deep epigastric, iliac or femoral vessels. Most observers indicate that all serious complications can be avoided by skillful technic. The Council agrees and believes, therefore, that universal employment of the method is to be deplored. For this reason it is necessary that the Council condemn the exploitation of the injection treatment of hernia by manufacturers of solutions.

QUESTIONNAIRE

1. Is the injection method of treatment in hernia practiced in your hospital?
2. Do you consider the method safe and effective?
3. Have there been any cases of unfavorable complications?
4. What have been the nature of the complications?

5. Have you noted cases of impotence resulting from the injection method of treating hernia?
6. Have you records of gangrene or abscess formation following the use of the injection treatment?
7. If your staff feels the method is of value, what is the composition of the solution which it uses?
8. Do you know of any records of postmortem examinations indicating that death was due to the use of the injection method?
9. What is the ratio of the number of cases of hernia treated by the injection method in comparison to those treated surgically?
10. Any other comments?

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

ASCORBIC ACID (See New and Nonofficial Remedies, 1940, p. 530).

The following dosage form has been accepted:

McKesson's Ascorbic Acid Tablets, 25 mg.: Each tablet contains 25 mg. of ascorbic acid-N. N. R., equivalent to 500 international units of vitamin C.

Prepared by McKesson & Robbins, Inc., Bridgeport, Conn.

OLD TUBERCULIN (See New and Nonofficial Remedies, 1940, p. 473).

Lederle Laboratories, Inc., Pearl River, N. Y.

Tuberculin Patch Test (Vollmer).—Prepared by the method of Vollmer under U. S. patent 2,190,745 (Feb. 20, 1940; expires 1957). Filter paper squares, 10 by 10 mm., are saturated with concentrated Old Tuberculin prepared by growing tubercle bacilli on the synthetic medium recommended by the Bureau of Animal Industry. These squares are dried and placed on strips of waterproof adhesive, 1 by 3 mm. in size, together with a control square made by saturating filter paper with concentrated uninoculated broth of the same composition which is used for producing tuberculin. The assembled adhesive strips are placed in moisture proof cellophane envelopes and sealed by heat. Marketed in packages each containing one complete test with control.

AMINOPHYLLINE-SEARLE (See New and Nonofficial Remedies, 1940, p. 557).

The following additional dosage forms have been accepted:

Tablets Aminophylline-Searle, 0.2 Gm. (3 grains).
Tablets Aminophylline-Searle, 0.2 Gm. (3 grains), Enteric Coated: The enteric coating consists of a mixture of mastic and magnesium stearate.

THIAMIN CHLORIDE (See New and Nonofficial Remedies, 1940, p. 528).

Thiamin Chloride-Squibb (See New and Nonofficial Remedies, 1940, p. 530).

The following additional dosage forms have been accepted:

Tablets Thiamin Chloride-Squibb, 3 mg.
Ampule Solution Thiamin Chloride-Squibb, 5 cc., 10 mg. per cc. 8-hydroxyquinoline sulfate 0.0025 per cent is used as preservative.
Ampule Solution Thiamin Chloride-Squibb, 5 cc., 25 mg. per cc. 8-hydroxyquinoline sulfate 0.0025 per cent is used as preservative.
Ampule Solution Thiamin Chloride-Squibb, 5 cc., 50 mg. per cc. 8-hydroxyquinoline sulfate 0.0025 per cent is used as preservative.
Ampule Solution Thiamin Chloride-Squibb, 10 cc., 10 mg. per cc. 8-hydroxyquinoline sulfate 0.0025 per cent is used as preservative.
The 8-hydroxyquinoline sulfate content of the foregoing solutions is determined as follows:

Add 0.1 cc. of ferric chloride test solution to 2 cc. of solution of thiamin chloride to be tested quantitatively for 8-hydroxyquinoline sulfate. Either dilute to 10 cc. or compare the color directly with a standard solution containing approximately 10 mg. of crystalline thiamin chloride and a known amount of 8-hydroxyquinoline sulfate (approximately 0.0025 Gm.) in 100 cc. of distilled water. The color is a bluish yellow green and group-characteristic for 8-hydroxyquinoline sulfate. It develops full intensity within two minutes and starts to fade after a period of six hours. The method is applicable to colorimetric analysis with an instrument, provided the concentrations are not too high. Thiamin chloride did not affect the determinations. The color development, however, depends on the hydrogen ion concentration. A *pH* of 3.0 to 5.0 is a favorable range.

The 8-hydroxyquinoline sulfate used as a preservative in Squibb's thiamin chloride solution conforms to the following standards: 8-hydroxyquinoline sulfate is a light yellow, crystalline substance, possessing a burning taste and characteristic saffron-like odor. It is easily soluble in water, dissolves with difficulty in alcohol and is insoluble in ether. The aqueous solution is acid to litmus. The melting point of the product is between 175-177 C. Add 1 drop of ferric chloride solution U. S. P. to 1 cc. of an aqueous solution of 8-hydroxyquinoline sulfate (0.1 Gm. in 10 cc. of water): a green coloration is produced. Add 1 drop of barium chloride solution U. S. P. to 1 cc. of an aqueous solution of 8-hydroxyquinoline sulfate (0.1 Gm. in 10 cc. of water): a white precipitate of barium sulfate is obtained. Add 1 cc. of normal

sodium hydroxide to 1 cc. of an aqueous solution of 8-hydroxyquinoline sulfate (0.1 Gm. in 10 cc. of water); a white crystalline precipitate is formed, which, on filtration, careful washing with cold water and drying in a desiccator, melts at 75 C. The free base has a saffron-like odor at room temperature; on sublimation or steam distillation, a phenol odor is noticeable. The picrate of the free base melts at 203 C.; it dissolves with difficulty in cold alcohol and is practically insoluble in benzene. With ferri cyanide, the free base forms a definite crystalline compound of yellow prismatic needles, soluble with difficulty in cold water.

Council on Foods

ACCEPTED FOODS

THE FOLLOWING ADDITIONAL FOODS HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO ACCEPTED FOODS.

FRANKLIN C. BING, Secretary.

CANNED FRUIT PRODUCTS (See Accepted Foods, 1939, p. 70).

Tyrrell and Garth, Inc., Houston, Texas.

GARTH BRAND TEXAS MAGNOLIA BREAKFAST FIGS, canned fresh figs packed in a light refined corn sugar (dextrose) and cane sugar (sucrose) syrup.

Analysis (submitted by manufacturer).—Moisture 62.4%, total solids 37.6%, ash 0.2%, fat (ether extract) 0.1%, protein (N \times 6.25) 0.5%, reducing sugars (as dextrose) 31.2%, invert sugar 22.8%, sucrose 8.0%, crude fiber 0.8%, carbohydrates other than crude fiber (by difference) 36.0%.

Calories.—1.47 per gram; 42 per ounce.

CHOCOLATE, COCOA AND CHOCOLATE FLAVORED BEVERAGE BASES (See Accepted Foods, 1939, p. 367).

Rockwood & Co., Brooklyn.

ROCKWOOD'S LOFAT BRAND COCOA, powdered cocoa containing not more than 1 per cent of cocoa butter, for special low fat diets.

Analysis (submitted by manufacturer).—Moisture 4.3%, total solids 95.7%, ash 6.1%, fat (ether extract) 0.4%, protein (nonalkaloidal N \times 6.25) 25.2%, crude fiber 5.7%, carbohydrates other than crude fiber (by difference) 56.0%, total nitrogen (N) 4.7%, alkaloidal nitrogen 0.7%, organic nonalkaloid nitrogen 4.0%, total alkaloids 2.96,* theobromine (Wadsworth method) 2.62%,† caffeine by difference 0.34%.

Calories.—3.28 per gram; 93 per ounce.

FATS AND OILS (See Accepted Foods, 1939, p. 30).

A. P. Catsacoulis & Co., Metelin, Greece. Product distributed in the United States by Standard Products Co., Importer and Wholesale Grocer, Boston.

GLORIA BRAND PURE OLIVE OIL, the fixed oil obtained from ripe olives grown in the island of Metelin, Greece, conforming to U. S. P. standards for pure olive oil.

Analysis (submitted by manufacturer).—Specific gravity at 25 C. 0.912, index of refraction at 20 C. 1.469, saponification number 192, iodine number 85, acid number (cubic centimeters of N/10 alkali required to neutralize 10 Gm. of oil) 3.9, solidifying point of fatty acids 23.1 C, cottonseed oil absent, peanut oil absent, sesame oil absent, teaseed oil absent.

Calories.—9 per gram; 256 per ounce.

Conti Products Corp., New York.

CONTI BRAND VIRGIN OLIVE OIL, imported Italian first cold pressed olive oil (U. S. P.).

Analysis (submitted by manufacturer).—Specific gravity at 25 C. 0.910-0.915, refractive index at 25 C. 1.46, saponification number 192, iodine number 83.5, free fatty acids as oleic acid 0.30, solidification point of fatty acids 23 C., unsaponifiable matter 0.8, cottonseed oil none, Sesame oil none, rape seed oil (Valents test) none, tea seed oil none, peanut oil none, sulfur none.

Calories.—9 per gram; 256 per ounce.

FOODS FOR SPECIAL DIETETIC PURPOSES (See Accepted Foods, 1939, p. 295).

The Chicago Dietetic Supply House, Inc., Chicago.

CELLU BRAND BEET JUICE, canned beet juice expressed from mature, partially cooked beets, packed without added water, sodium chloride or sucrose.

Analysis (submitted by manufacturer).—Moisture 91.7%, total solids 8.3%, ash 0.57%, fat (ether extract) 0.1%, protein (N \times 6.25) 0.6%, crude fiber none, invert sugar 1.1%, sucrose 5.1%, starch none, undetermined carbohydrates (by difference) 0.8%, carbohydrates other than crude fiber (by difference) 7.0%.

Calories.—0.31 per gram; 8.8 per ounce.

* Total alkaloids were determined according to the method of Moir, D. D., and Hinks, E.: The Determination of Total Alkaloids in Cocoa, Analyst 60: 439 (July) 1935.

† Theobromine was determined according to the method of Wadsworth as described in Allen, A. H.: Commercial Organic Analyses, ed. 5. Philadelphia, P. Blakiston's Son & Co., 1933, vol. 7, p. 602.

GRAIN PRODUCTS (See Accepted Foods, 1939, p. 95).

Pillsbury Flour Mills Company, Minneapolis.

PILLSBURY'S WHEAT BRAN, heat-treated coarsely flaked milled bran.

Analysis (submitted by manufacturer).—Moisture 8.5%, total solids 91.5%, ash 6.5%, protein (N \times 6.31) 17.2%, fat (ether extract) 3.5%, sucrose 4.5%, reducing sugars as dextrose 0.1%, crude fiber 10.5%, carbohydrates other than crude fiber (by difference) 53.8%, phosphorus (P) 1.48 per cent, iron (Fe) 9 mg. per hundred grams.

Calories.—3.15 per gram; 89 per ounce.

PREPARATIONS USED IN THE FEEDING OF INFANTS (See Accepted Foods, 1939, p. 156).

Beech-Nut Packing Company, Canajoharie, N. Y.

BEECH-NUT BRAND CHOPPED APRICOTS, canned, chopped, cooked apricots prepared from unsulfured dried fruit.

Analysis (submitted by manufacturer).—Moisture 73.9%, total solids 26.1%, ash 1.1%, fat (ether extract) 0.1%, protein (N \times 6.25) 1.3%, crude fiber 0.9%, carbohydrates other than crude fiber (by difference) 22.7%, specific gravity 1.109.

Calories.—0.97 per gram; 28 per ounce.

Libby, McNeill & Libby, Chicago.

LIBBY'S BRAND HOMOGENIZED BABY FOODS FORMULATED COMBINATION No. 8, containing bananas, apples and apricots with a small amount of added water.

Analysis (submitted by manufacturer).—Moisture 85.5%, total solids 14.5%, ash 0.5%, sodium chloride 0.04%, fat (ether extract) 0.01%, protein (N \times 6.25) 0.5%, crude fiber 0.3%, carbohydrates other than crude fiber (by difference) 13.2%, calcium (Ca) 0.009%, phosphorus (P) 0.024%, iron (Fe) 0.0016%, copper (Cu) 0.00020%.

Report of titration test (1939) indicates that this product contains 0.022 mg. of ascorbic acid per gram, 0.62 per ounce. Protocols of biologic assay (1939) indicate that this product contains approximately 9 U. S. P. units of vitamin A per gram, 226 per ounce; and 0.13 Sherman-Bourquin unit of vitamin G (riboflavin) per gram, 3.7 units per ounce. Rat growth tests have demonstrated measurable amounts of vitamin B₁ (thiamin).

Calories.—0.56 per gram; 15.9 per ounce.

Libby, McNeill & Libby, Chicago.

LIBBY'S BRAND HOMOGENIZED BABY FOODS FORMULATED COMBINATION No. 9, containing peas, spinach and green beans with a small amount of added sodium chloride.

Analysis (submitted by manufacturer).—Moisture 91.5%, total solids 8.5%, ash 1.1%, sodium chloride 0.6%, fat (ether extract) 0.1%, protein (N \times 6.25) 2.3%, crude fiber 2.5%, carbohydrates other than crude fiber (by difference) 2.5%, calcium (Ca) 0.041%, phosphorus (P) 0.045%, iron (Fe) 0.0019%, copper (Cu) 0.00022%.

Report of titration test (1939) indicates that this product contains 0.047 mg. of ascorbic acid per gram, 1.33 per ounce. Protocols of biologic assay (1939) indicate that this product contains approximately 22.5 U. S. P. units of vitamin A per gram, 639 per ounce; and 0.25 Sherman-Bourquin unit of vitamin G (riboflavin) per gram, 7.1 units per ounce. Rat growth tests have demonstrated measurable amounts of vitamin B₁ (thiamin).

Calories.—0.20 per gram; 5.7 per ounce.

The Borden Company, New York.

BROLAC, a modified milk for infant feeding prepared from whole milk, skimmed milk and lactose (the mixture being evaporated), with added thiamine hydrochloride, cod liver oil concentrate and ferric citrate and the whole homogenized and heat processed.

Analysis (submitted by manufacturer).—Moisture 73.0%, total solids 27%, ash 1.2%, fat 4.6%, lactose (by difference) 15.7%, protein (N \times 6.38) 5.4%, available iron (*J. Biol. Chem.* 110: 685 [Aug.] 1935) from 0.38 to 0.56 mg. per fluidounce.

Protocols of biologic assay submitted by the firm [1940] showed that the product contains not less than 125 U. S. P. units of vitamin A, 4.0 international units of thiamine and 21 U. S. P. units of vitamin D per fluidounce; 2,000 U. S. P. units of vitamin A, 65 international units of thiamine and 340 U. S. P. units of vitamin D per can (16 fluidounces).

Calories.—40 per fluidounce, 624 per can (16 fluidounces).

SUGARS AND SYRUPS (See Accepted Foods, 1939, p. 324).

American Syrup & Preserving Company, Nashville, Tenn.

CRYSTAL FLAKE BRAND SYRUP, a mixture of corn syrup and granulated sugar syrup, artificially flavored with vanillin and coumarin.

Analysis (submitted by manufacturer).—Moisture 23.5%, total solids 76.5%, ash 0.2%, protein (N \times 6.25) 0.03%, reducing sugars before inversion (polarimetric method) 33.6%, reducing sugars after inversion (polarimetric method) 35.0%, sucrose (polarimetric method) 1.4%, dextrose (modification of Barfoed copper reduction method) (dry basis) 23.6%—fresh basis (calculated) 18.1%, maltose (dry basis) 35.2%, fresh basis (calculated) 26.9%, dextrin (by difference) 29.8%.

Calories.—3.05 per gram; 87 per ounce.

Heyl Brothers Company, Philadelphia.

HEYL'S BRAND TABLE SYRUP, consisting of 90 per cent corn syrup and 10 per cent cane refiners' syrup.

Analysis (submitted by manufacturer).—Moisture 21.7%, total solids 78.3%, ash 0.8%, nitrogen 0.015%, reducing sugar before inversion (fresh basis) 32.4%, total carbohydrates (by difference) 77.4%.

Calories.—3.1 per gram; 88 per ounce.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, AUGUST 17, 1940

THE PLATFORM OF THE AMERICAN MEDICAL ASSOCIATION

The American Medical Association advocates:

1. The establishment of an agency of the federal government under which shall be coordinated and administered all medical and health functions of the federal government exclusive of those of the Army and Navy.
2. The allotment of such funds as the Congress may make available to any state in actual need, for the prevention of disease, the promotion of health and the care of the sick on proof of such need.
3. The principle that the care of the public health and the provision of medical service to the sick is primarily a local responsibility.
4. The development of a mechanism for meeting the needs of expansion of preventive medical services with local determination of needs and local control of administration.
5. The extension of medical care for the indigent and the medically indigent with local determination of needs and local control of administration.
6. In the extension of medical services to all the people, the utmost utilization of qualified medical and hospital facilities already established.
7. The continued development of the private practice of medicine, subject to such changes as may be necessary to maintain the quality of medical services and to increase their availability.
8. Expansion of public health and medical services consistent with the American system of democracy.

FOOD AND THE WAR

The maintenance of the food supply of the army and of the civilian population of the country in a time of emergency is as important a question as any of the questions which may confront our leaders in times of rapid action and stirring events. In World War I every foreign country early appointed a food commission to control this problem. Early in 1917 THE JOURNAL emphasized the advisability of appointing at once in this country an appropriate scientific body to advise on such questions. The experience of many a foreign country after the war showed how inefficient and futile had been some of the considerations given to these vital problems. In the Netherlands and Denmark people were deprived of important sources of vitamin A in order that butter might be sold to other countries. As a result, numerous children developed xerophthalmia and similar conditions. In Germany the effects of malnutrition resulting from the blockade became apparent later in increased cases of tuberculosis among those

who were children at the time of the war. Today German writers are emphasizing the necessity for control of nutrition as basic to the winning of any conflict.

It is no secret that problems of maintenance of the food supply are already serious in the warring countries. Indeed, Great Britain has begun a meatless ration for some of the days of the week, inclining largely toward a diet of eggs, milk and vegetables. In a recent communication a German writer points out that the German diet must depend considerably during the forthcoming months on bread and potatoes and that it is necessary under such circumstances that the bread be a whole grain bread. Recently British authorities have appointed a food commission to control food in the British army and among the British people, and already it has been decided to prepare a bread fortified with vitamin B₁ and calcium and to offer this for sale at a price similar to that for white bread. Moreover, British authorities have been urging cooperation of the Ministry of Food with the Ministries of Health and Agriculture to develop a national policy for control of the food supply.

In World War I the Surgeon General of the army early in the mobilization of the drafted army took steps leading toward the formation of a division in his office charged with the duty of advising on all questions relating to the nutrition of the soldier. The importance of nutrition was recognized early, yet the Quartermaster General was opposed to the establishment of nutrition officers in camp and it required six months before the Secretary of War authorized a food division for the army. The situation which confronts us today indicates the need for prompt action with regard to food and nutrition as a part of our current efforts toward preparedness. The National Research Council has a subcommittee on nutrition which is working on the problem of emergency and standard rations for the armed forces. The question of food for the soldier is still primarily in the division of the Quartermaster's office, but the Surgeon General of the army is equally concerned with the question of feeding the invalid soldier and with the feeding of troops for the prevention of illness. It is understood that two different divisions of the Advisory Commission on National Defense have set up subcoordinators who will be concerned with the problems of food. One of these divisions is that concerned with agriculture, the other that concerned with the consumer. There does not seem to be any evidence that any effort has been made to coordinate in any manner the work of these different advisory bodies, nor is it apparent from the evidence thus far available that modern dietetics and leading authorities in the field have been called into service.

The fundamental importance of good nutrition not only for those engaged in military services but for the population as a whole as the source of military units needs no argument in its behalf. What is needed is suitable coordination in Washington of all the various

bodies that will be concerned with the nutrition of the nation. Such coordination can be brought about properly only by adequate representation of medicine, which includes scientific nutrition, in the Advisory Commission on National Defense.

NEUROCIRCULATORY ASTHENIA IN SOLDIERS

The appearance of the second edition of Sir Thomas Lewis's "The Soldier's Heart and the Effort Syndrome"¹ focuses the attention of physicians once more on one of the most frequent causes of invalidism among soldiers. "Soldier's heart," "the irritable heart of soldiers," "disturbed action of the heart," "effort syndrome" and "neurocirculatory asthenia" is not a disease. It is rather a complex of characteristic neurovascular symptoms, which occur with sufficient regularity to justify grouping into a definite syndrome. This condition is not an organic disease of the heart or a clinical entity with definite pathologic appearances. Neither is it peculiar to war conditions. Modern warfare with all its horrors, the physical and emotional strain and the constant fear of death which it invokes is bound to reap a rich harvest of victims of neurocirculatory asthenia. The extension of the horrors of war to the civilian population multiplies the cases beyond measure. In the war of 1914-1918, Sir Thomas Lewis states, for every four wounded there was one cardiovascular case in the British Expeditionary Force. Seventy thousand had reported sick and were classed as cardiovascular by the summer of 1918, and 44,000 soldiers with effort syndrome became pensioners. Actually no more than one out of six of these soldiers suffered from disease of the heart. The rest represented cases of "effort syndrome."

MacLean in 1867 and Meyers in 1870 wrote of the "irritable heart of soldiers" in the British army, while Da Costa described its occurrence in our Civil War. Da Costa pointed out that the symptoms were frequently present before enlistment. He stressed fever, diarrhea, wounds and the arduous existence of the soldier as etiologic factors. He gave the advice "not to send back soldiers just convalescent from fevers or other acute maladies too soon to active work" and "that recruits, especially very young ones, be as far as practicable exercised and trained in marches and accustomed to fatigue before they are called upon to undergo the wear and tear of actual warfare."

To differentiate the condition from organic disease of the heart the English classified these cases as "disturbed action of the heart (D. A. H.)." The effect of suggesting "something wrong with the heart" in a condition of undoubted neurogenic character had anything but a salutary effect on the patients. For this reason, and because the symptoms resembled those of fatigue following effort in normal persons, Lewis gave

it the name "effort syndrome." The name "neurocirculatory asthenia" was suggested by a team of medical reserve corps officers of the American army² sent to Colchester, England, to study the condition with Sir Thomas Lewis. They felt that the symptoms comprising effort syndrome in normal persons are not exactly the same as those observed in neurocirculatory asthenia.

While the basic mechanism of neurocirculatory asthenia has not been elucidated, the tendency of students of the syndrome is to regard it as psychogenic—a functional disorder of the autonomic nervous system. Given a neuropathic predisposition based on hereditary and constitutional inadequacy, many factors can assume the role of exciting or initiating agents. Among these, infectious or physical agents and the psychic strain of war are most important. The syndrome is characterized by dyspnea, fatigue and exhaustion, palpitation or heart consciousness, fainting, giddiness, headache, sweating, blueness or mottled coloring of the hands, dermatographia and a variety of neurovascular phenomena. The pulse at rest and in sleep is normal but is easily accelerated by emotion or exercise and is abnormally slow in its return to normal after exercise. Blood pressure is as a rule normal at rest but exhibits the same exaggerated response to exercise and emotion as does the pulse. The electrocardiogram does not reveal any structural changes. The symptom phosphaturia, so commonly observed in neurotic patients, is common especially after light exercise. The diagnosis of the syndrome presents few difficulties. Its differentiation from organic disease of the heart, however, calls for special training and experience in cardiology. The diagnostic problem likewise involves the recognition of possible associated disease such as pulmonary tuberculosis, exophthalmic goiter or malaria. The electrocardiogram, the roentgenogram and previous training and experience in cardiology should eliminate most of the earlier errors.

Undoubtedly the most important phase in the treatment of this condition is prevention. Prophylaxis should properly begin at the time of enlistment and in the training camps. The faulty examinations in the last war are clearly illustrated, as pointed out by Lewis, by the fact that nearly half the patients invalided for effort syndrome or heart disease developed the symptoms before joining the forces and more than half developed them before their training was complete. "There is not the slightest doubt," states Lewis, "that adequate examination would have eliminated most of these men, would have kept them in useful employment, would have spared them much suffering, would have saved hospital space and large funds of the Ministry of Pensions. Such cases were six or seven months in training, five months in hospital, and gave in return 2.2 months of full and 1.5 to two months light duty." Experience in the last war demonstrated that the

1. Lewis, Thomas: *The Soldier's Heart and the Effort Syndrome*, ed. 2, London, Shaw & Sons, 1940.

2. Oppenheimer, B. S.; Levine, S. A.; Morison, R. A.; Rothschild, M. A.; St. Lawrence, W., and Wilson, F. N.: *Report on Neurocirculatory Asthenia and Its Management*, Mil. Surgeon, April and June 1918.

prognosis on the whole was more favorable when treatment was instituted early. Prolonged rest in bed and digitalis had little if any effect on the course of the ailment. A correct psychologic approach to a condition with a pronounced mental aspect is essential to success. The patient above all must be reassured that he is not suffering from heart disease. The treatment of infections and of foci of infections is important. The regimen of graded exercises, as developed by Lewis, has been preeminently successful in restoring most of these patients to a more or less normal state. It has been useful both for sorting patients as to their reaction to exercise and in curing their symptoms. After a short rest in bed this regimen is initiated by short drills outdoors supplemented by hikes and games. The average stay at the hospital under this plan has been shortened from an average of 5.3 months to some five or six weeks.

IONIZED CALCIUM IN MILK

Much information is available about the inorganic salts of milk, but more is yet to be learned about the forms in which these constituents occur and the manner of their utilization by the body. In many respects our knowledge of the physical chemistry of milk is particularly incomplete. Clark,¹ for example, has pointed out that important mathematical constants which are essential to a thorough understanding of the buffer systems of milk are not available. Information about the equilibrium between the various forms of calcium and of the concentration of ionized calcium in milk is especially desirable. Such information not only is important to a thorough understanding of the physiology of milk secretion but also finds application in studies that might shed light on factors involved in the utilization of the calcium in milk.

Recently Nordbø,² with the help of ingenious methods, made a study of the concentration of ionized calcium, as well as magnesium, in cow's milk. The values calculated for the concentration of ionized calcium in the ultrafiltrate of milk approximate the values for total calcium in the ultrafiltrate of blood serum. While practically all the calcium in the ultrafiltrate of blood serum is present in the form of calcium ions, only 20 per cent of the total calcium in the ultrafiltrate of milk is present in the ionic form. It is remarkable that the concentration of citric acid and lactose in the ultrafiltrate of milk seems to be of the order of magnitude necessary to account for the non-ionized calcium as well as for the non-ionized magnesium. The combination of calcium with citric acid, as well as the rather unusual combination of calcium with lactose, results in the formation of non-ionized calcium compounds. These observations may explain how the risk of a loss of calcium through phosphate precipitation in the intestine is reduced. It also may be recalled that there is evidence that the

presence of lactose in the diet favorably influences the utilization of calcium by the growing animal.³ Moreover, there is evidence that lactose in the diet, in contrast to sucrose or dextrin, is able to prevent tetany in thyroparathyroidectomized dogs, an observation which supports the view that milk sugar may be important in calcium metabolism.⁴ With regard to the effect of citric acid on calcium metabolism, it may be recalled that the addition of a citric acid and sodium citrate mixture to a rachitogenic diet can alter the diet to such an extent that it no longer produces rickets.⁵

In the presence of additional citric acid, cow's milk yields a more finely divided casein precipitate, and this phenomenon may be due to a suppression of the number of calcium ions present. As pertinently pointed out by Nordbø, if this is true a similar result might be obtained by the addition of extra lactose. In any case, the fact that lactose combines with calcium to form soluble, non-ionized compounds would seem to indicate that milk sugar, like citric acid, not only serves as a source of food energy but also is a factor in influencing the state of calcium in milk. This observation may well merit further study by those who are interested in learning more about the physicochemical properties of milk.

Current Comment

CLOTHING AND AIR CONDITIONING STANDARDS

The "double standard" of temperature for men and women complicates the problems of the engineer and increases the expense of heating and cooling office buildings. Women prefer higher temperatures than men for comfort not so much because of any difference in constitution as for the clothing they wear. Yaglou¹ undertook some unique experiments to establish this point. The mean skin temperature of women under ordinary conditions in a room of 71.5 F. and 30 per cent relative humidity with 20 feet per minute air movement was about 2 degrees Fahrenheit lower than that of men. The feet and hands of women averaged 5 degrees cooler than men's, while the trunk was only 0.5 degree cooler than men's. When most of the men in a room were comfortable the women generally were cold. To make the women comfortable the room temperature had to be raised to about 76 F.; then the men began to complain. When the men and women were dressed alike they were comfortable at about the same temperature. When both sexes wore a minimum of clothing, 84 degrees was satisfactory for both sexes. Men were dressed in women's summer clothing; then they demanded a temperature of 80 degrees, which was about the same as that preferred by women similarly

3. Kline, O. L.; Keenan, J. A.; Elvehjem, C. A., and Hart, E. B.: *J. Biol. Chem.* **98**: 121 (Oct.) 1932. French, R. B., and Cogwill, G. R.: *J. Nutrition* **14**: 383 (Oct.) 1937.

4. Dragstedt, L. R., and Peacock, S. C.: *Am. J. Physiol.* **64**: 424 (May) 1923. Inouye, T., *ibid.* **70**: 524 (Nov.) 1924.

5. Shohl, A. T.: *J. Nutrition* **14**: 69 (July) 1937.

1. Clark, W. M., in Rogers, Lore A.: *Fundamentals of Dairy Science*, ed. 2, New York, Chemical Catalog Company, 1935.

2. Nordbø, R.: *J. Biol. Chem.* **128**: 745 (June) 1939.

1. Yaglou, C. P.: The Significance of Clothing in Air Conditioning Standards, read before the annual meeting of the American Industrial Hygiene Association, New York, June 5, 1940. Distributed by the Air Conditioning & Refrigerating Machinery Association, Washington, D. C.

dressed. Women were dressed in men's winter clothes; then the comfortable air temperature for them went down to 70.5 F., or a degree lower than that preferred by men wearing the same clothes. In almost all instances comfort was associated with a mean skin temperature between 91.5 and 93 F. in both men and women, regardless of the air temperature, the amount of clothing and the season of the year in which the experiments were done. The mean surface temperature of the clothes and the exposed skin varied from 67.6 to 91.9 degrees under comfortable conditions. The wearing of additional clothes always increased the skin temperature of all parts of the body, the covered or the exposed, and decreased the surface temperature of the clothing worn. Yaglou concluded that differences in comfort standards between men and women are primarily due to differences in dress and can be reconciled by adjustments of clothing, according to susceptibility to cold or heat. If women in winter would dress in clothes comparable in warmth to those of men, they would be comfortable in temperatures of about 70 instead of 76 at present. If men would take off their coats, vests and collars in summer, buildings would not have to be cooled much below 85 degrees instead of 76 to 80 at present. Thus much of the difficulty experienced with sharp temperature contrasts between the sexes could be alleviated simply by adjustments of clothing.

ARCHIVES OF SURGERY ISSUES SPECIAL
NUMBER HONORING DEAN LEWIS

The issue of the *Archives of Surgery* for August is a "Dean Lewis Number," prefaced with a photograph showing J. M. T. Finney, Dean Lewis and Harvey Cushing in 1926. The volume begins with a brief biographic note picturing Lewis as a master teacher with a marvelous personality, the product of the teaching of such masters as Billings, Herrick, Senn and Bevan in the medical school and Fenger, Harvey, Ochsner, Andrews and Harris in the hospital. Almost immediately after completing his internship, Dean Lewis became a teacher. He has traveled far and wide to lecture to medical societies, for which he has been constantly in demand. He has talked particularly about ductless glands, the transplantation of tissue, bone tumors, neurosurgery and the pathologic conditions affecting the breast. Wherever he taught before his retirement he was surrounded by admiring listeners, and his students at Johns Hopkins Hospital were constantly amazed at his mastery of his subject and his operative facility. It is not surprising that many leaders in the field of medicine and surgery should unite to do him honor. The special issue of the *Archives of Surgery* contains thirty-one scientific articles by notable investigators, teachers and clinicians whose places of residence reflect the entire nation and whose positions of leadership reflect all of medical science. Dr. Lewis was himself the editor of the *Archives of Surgery* from its establishment in 1920 until his retirement as editor emeritus last year. The preparation of the special number in his honor is a well merited recognition of his distinguished services as surgeon, investigator, teacher, author and editor.

Medical Preparedness

IN THIS SECTION OF THE JOURNAL EACH WEEK WILL APPEAR OFFICIAL NOTICES BY THE COMMITTEE ON MEDICAL PREPAREDNESS OF THE AMERICAN MEDICAL ASSOCIATION, ANNOUNCEMENTS BY THE SURGEON GENERALS OF THE ARMY, NAVY AND PUBLIC HEALTH SERVICE, AND OTHER GOVERNMENTAL AGENCIES DEALING WITH MEDICAL PREPAREDNESS, AND SUCH OTHER INFORMATION AND ANNOUNCEMENTS AS WILL BE USEFUL TO THE MEDICAL PROFESSION.

QUESTIONNAIRES RETURNED

Almost 180,000 questionnaires for the submission of personal information to be associated with any mobilization of the medical profession that may be required have now been put in the mails and, as we go to press, almost 80,000 of these have been returned. It is inter-

Questionnaires Returned

State	Number Sent	Receipts Including August 9	Per Cent
Alabama.....	2,084	844	40.5
Arizona.....	590	302	51.3
Arkansas.....	1,818	709	39.2
California.....	11,810	4,792	40.6
Colorado.....	1,949	885	45.3
Connecticut.....	2,531	1,311	51.8
Delaware.....	383	159	47.7
District of Columbia.....	2,247	1,017	45.3
Florida.....	2,283	944	41.3
Georgia.....	2,831	1,297	46.0
Idaho.....	420	221	52.6
Illinois.....	12,306	5,883	47.8
Indiana.....	4,149	1,870	45.0
Iowa.....	3,059	1,682	55.0
Kansas.....	2,066	993	48.0
Kentucky.....	2,766	1,199	43.4
Louisiana.....	2,402	905	37.4
Maine.....	982	475	48.4
Maryland.....	2,971	1,235	41.6
".....	7,910	3,356	42.3
".....	6,374	2,769	43.5
".....	3,505	2,218	63.3
".....	1,500	551	36.7
".....	5,271	2,437	46.3
Montana.....	546	260	47.6
Nebraska.....	1,599	1,141	71.4
Nevada.....	166	76	45.8
New Hampshire.....	666	326	49.0
New Jersey.....	5,857	2,605	44.5
New Mexico.....	436	150	34.4
New York.....	27,165	12,200	44.7
North Carolina.....	2,732	1,052	38.6
North Dakota.....	519	289	55.7
Ohio.....	9,338	4,281	46.0
Oklahoma.....	2,363	1,012	42.8
Oregon.....	1,438	726	50.6
".....	13,422	5,608	41.8
".....	953	391	41.1
".....	1,401	520	37.2
".....	504	315	62.5
".....	2,915	1,038	35.7
".....	6,932	2,626	37.9
Utah.....	574	299	52.3
Vermont.....	525	241	46.0
Virginia.....	2,903	1,290	44.5
Washington.....	2,188	1,029	47.0
West Virginia.....	1,847	770	41.7
Wisconsin.....	3,496	1,824	52.2
Wyoming.....	276	127	46.0
Miscellaneous.....	95	...	....
Alaska.....	77	9	11.7
Canal Zone.....	134	31	23.2
Hawaii.....	472	9	1.9
Philippine Islands.....	3,095	123	....
Puerto Rico.....	480	123	25.3
Virgin Islands.....	14	...	....
Totals.....	179,801	79,222	43.9

esting to observe the varying percentages of physicians in various states who have replied. Nebraska leads all other states with more than 71 per cent, whereas New Mexico, Mississippi and Tennessee have made the smallest return. From week to week the record of returns will be listed, as it is highly important that there be a card in the system of every physician in the United States regardless of his ability to render military service.

ORGANIZATION SECTION

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Change in Status.—H. R. 8613 has been reported to the House without amendment, providing that any person who served as a member of the Army Nurse Corps or of the Navy Nurse Corps during the World War and continuously thereafter until May 13, 1926, and who was, prior to June 20, 1930, separated from said corps by reason of physical disability incurred in line of duty, shall, on her application therefor, be entitled to be placed on the retired list of the Nurse Corps of which she was a member, her retired pay becoming effective on the date of receipt by the Secretary of War or the Secretary of the Navy, as the case may be, of such application or the date of enactment of this bill, whichever is later.

Bills Introduced.—S. 4224, introduced by Senator Sheppard, Texas, and H. R. 10278, introduced by Representative May, Kentucky, propose that in time of war or during an emergency declared by the Congress the Secretary of War may, in his discretion, dispense with any of the examination for promotion

in the Regular Army of officers of the Medical, Dental and Veterinary Corps, except the physical examination. H. R. 10223, introduced by Representative Vinson, Georgia, proposes to authorize the Secretary of the Navy to establish naval hospitals at the naval air station at Jacksonville, Fla., and San Juan, Puerto Rico; the submarine base, Coco Solo, Canal Zone; the naval station, Guantanamo Bay, Cuba, and the Marine Barracks, Quantico, Va. H. R. 10239, introduced by Representative Courtney, Tennessee, proposes to authorize the Administrator of Veterans' Affairs to pay to Dr. H. A. Gant, Columbia, Tenn., the sum of \$50 per month as long as he shall live. The bill states: "The said Dr. H. A. Gant rendered high public service in various yellow fever epidemics in the South, and certain statistics kept by him were of material aid to those engaged in the yellow fever investigations in Cuba in the establishment of the theory of the transmission of yellow fever by the mosquito. The said Dr. H. A. Gant is now of advanced age and totally and permanently disabled." The bill was referred to the House Committee on World War Veterans' Legislation.

MEDICAL ECONOMIC ABSTRACTS

HEALTH SERVICE SYSTEM OF SAN FRANCISCO

Managers of the Health Service System for municipal employees and the employees of the Board of Education of San Francisco have issued a first annual report covering fifteen months of operation of a plan covering 15,000 persons. The information which follows is taken from that report.

The membership was made up of 9,809 employees, 3,124 adult dependents and 1,817 minor dependents. This was an average monthly membership during a period when there was a steady increase in members. The premium for each employee and adult dependent was \$2.50 a month. Minor dependents under 18 years of age were charged \$1.50 a month, and each additional minor dependent \$1 a month.

The percentage distribution of expenditures given in the first table was made from the total of the combined funds.

Of the total of \$355,232.77 disbursed for medical care, approximately 68 per cent went for doctor service, 23 per cent for hospitalization and 9 per cent for x-ray, clinical laboratory examinations, ambulance and physical therapy.

Nearly a quarter of a million dollars was paid to doctors during the first year for the treatment of 10,696 individuals. This is 73 per cent of the entire membership. Sixty-seven per

Thirteen hospitals received a total of \$81,422.80 for the hospitalization of 1,500 persons during the twelve months ended Sept. 30, 1939. The average cost per case was \$54.28.

Payment to the hospitals is made at the flat rate of \$7.20 a day, regardless of the amount of service used. In some so-called

Payment to Doctors and Value of Unit by Months

October 1938—September 1939		
Month and Year	Paid to Doctors	Value of Unit
October 1938	\$13,452.00	\$1.00
November 1938	17,603.50	1.00
December 1938	38,063.00	1.00
January 1939	17,940.75	0.50
February 1939	18,874.87	0.65
March 1939	17,801.04	0.50
April 1939	18,948.17	0.54
May 1939	19,543.34	0.57
June 1939	19,630.78	0.57
July 1939	19,174.62	0.66
August 1939	20,273.08	0.65
September 1939	20,451.42	0.67
Total	\$241,756.57	\$0.66

"come and go" cases, in which the patient is confined only part of the day, the full daily rate is not charged.

This entitles the patient to a ward bed, meals, general nursing care, floor supply of drugs and dressings, x-ray and clinical laboratory examinations, use of operating room, administration of anesthetic and various other services. A patient may select a private or semiprivate room by paying to the hospital the difference between the regular ward rate and the rate for any other room he may choose. Many patients chose the higher priced accommodations.

This year's experience has shown that the cost of providing hospital benefits was 46 cents per subscriber monthly, exclusive of overhead.

In November 1939 several changes were made in the plan. The rate of contribution for all minor dependents was raised to \$1.50 a month and the following changes in the service were adopted to affect dependents only:

1. Treatment was limited to one year for any one condition, illness or injury.
2. The rate for minor dependents was increased to \$1.50 a month regardless of the number enrolled by the employee.
3. In the future all dependents must have a medical examination before being admitted to the System and any pathologic

Percentage Distribution of Expenditures

Doctors	57.9
Hospitals	19.5
X-ray laboratories	3.8
Clinical laboratories	2.2
Ambulance	0.4
Physical therapy	1.3
Medical overhead	5.3
Nonmedical overhead	7.9
Equipment and alterations	0.5
Unexpended balance	1.2
	100.0

cent of the employees had the service of a doctor by the end of September 1939, and that percentage went up to 75 by the end of the calendar year. It was recognized that there was considerable abuse of the system. Nine hundred and eighty-six local doctors and ninety-four out of town doctors participated in the Health Service.

The chief complaint of the doctors has been that the monthly value of the unit of service was too low.

condition existing at that time will have to be corrected before the person is admitted; or the person may be admitted but the Health Service will not be responsible for the bills for treatment of that condition.

4. No minor dependent will be admitted until attaining the age of 1 year.

The number of office visits for either dependents or employees for which the Service will be responsible has been limited to five a month. This was a counter proposal to the one made by the doctors' committee that the patient be required to pay for the first two office visits and the first two home visits. Henceforth, all subscribers are to be restricted to the service of one doctor a month except with the consent of the medical director. This was to prevent patients from shopping around for the same condition. Refractions were also eliminated from the benefits beginning with Nov. 13, 1939. The fee schedule was revised to permit the general practitioner to receive more remuneration for his services.

The administration costs were 13.2 per cent, and it is believed that this can be reduced in the future. Demands of osteopaths and chiropractors and practitioners of drugless therapy for a right to practice under the plan are in course of litigation.

The average cost per employee member monthly for medical services is \$1.87, adult dependents \$2.28, and for minor dependents \$2.05.

AUTOMOBILE AND MEDICAL EXPENSES

That the whole question of the ability to obtain medical care is confused with the fact that most people buy what they are sold rather than what they need is illustrated by a comparison of the expenditures among low income classes for automobile purchases and operation with those for medical care. Statistics

TABLE 1.—Percentage of White Families That Reported Automobile Ownership in 1935-1936, at Selected Income Levels

Income Class	West Central	Rocky Mountain
\$ 750-\$ 999	38	65
\$1,250-\$1,499	66	76
\$1,750-\$1,999	72	79
\$2,250-\$2,499	77	86
\$3,000-\$3,499	85	78
\$4,000-\$4,999	90	94
\$5,000 and over	89	78

TABLE 2.—Estimated Average Total Automobile Expenditures Incurred by Automobile Operators, for White Families, at Selected Income Levels

Income Class	West Central	Rocky Mountain
\$ 750-\$ 999	\$ 78	\$ 88
\$1,250-\$1,499	154	191
\$1,750-\$1,999	226	228
\$2,250-\$2,499	258	277
\$3,000-\$3,499	306	283
\$4,000-\$4,999	329	429
\$5,000 and over	542	510

TABLE 3.—Average Expenditures for Medical Care by Families

Income Class	West Central	Rocky Mountain
\$ 250-\$ 499	\$ 25	\$ 42
\$ 500-\$ 749	26	38
\$ 750-\$ 999	44	64
\$1,000-\$1,249	51	67
\$1,250-\$1,499	51	93
\$1,500-\$1,749	83	85
\$1,750-\$1,999	87	92
\$2,000-\$2,249	113	112
\$2,250-\$2,499	84	111
\$2,500-\$2,999	104	103
\$3,000-\$3,499	108	139
\$3,500-\$3,999	167	107
\$4,000-\$4,999	129	201
\$5,000 and over	230	194

are taken from a "Study of Consumer Purchases" issued by the United States Department of Labor, Bulletins 646 and 648. The middle sized cities in the West Central and Rocky Mountain districts are used for comparison because the bulletins mentioned presented figures from these two localities in comparable form (table 1).

In these cities the expenditures incurred by those who operated automobiles were as given in table 2.

The expenditures for medical care are given in a somewhat different manner but permit comparison (table 3).

DEATH RATES CONTINUE TO FALL

In spite of depressions, economic changes and social handicaps, death rates continue to fall. Comparisons of vital statistics between the United States and European countries are always unfair, owing to the fact that the United States is almost as large as the whole of Europe and presents an almost equal diversity of conditions. The true comparison should be between certain localities in the United States and similar ones in Europe. Recent reductions in infant mortality illustrate this point.

While the reductions for the entire registration area from 1933 (when for the first time all states were in that area) to 1939 (provisional rate) has been from 58 per thousand live births to 48, the latter figure by no means represents the situation in certain states where economic and medical conditions have had an opportunity to produce their best results.

In 1937 New Jersey was the only state to have an infant death rate below 40, the rate being 39. In the next year New Jersey was joined by Nebraska with a rate of 36 and Oregon with 39. The provisional rate for 1939, which is seldom changed much by later figures, shows thirteen states below 40, with the following rates:

Connecticut	36
Illinois	37
Indiana	39
Iowa	39
Kansas	39
Massachusetts	39
Minnesota	35
Nebraska	37
New Jersey	38
New York	39
Oregon	37
Utah	39
Washington	37

The tuberculosis rates show similar characteristics, the decline for the entire registration since 1933 (when all states were, for the first time, included) having been from 59.5 per hundred thousand of estimated population to 48.9 in 1938. In 1933, however, there were only four states with a rate below 30. These were Iowa 26, Nebraska 22.2, North Dakota 24.4 and Utah 21.8. In 1938, however, there were seven states with the following rates:

Idaho	22.1
Iowa	19.2
Kansas	22.9
Nebraska	16.6
New Hampshire	29.0
North Dakota	19.8
Utah	19.3
Wyoming	25.5

Perhaps the most significant feature of these statistics is the comparatively rapid decline of death rates in the states already having the lowest rate. Every student of vital statistics knows that as a usual thing, unless some specific method of treatment (as in the case of diphtheria) is discovered, the conquest of a disease is slower as the death rate declines. That this does not seem to be true with regard to tuberculosis would indicate that this disease is really on the way to join numerous other plagues that have ceased to be a significant threat to the life of mankind.

WOMAN'S AUXILIARY

The National Meeting in New York

At the Eighteenth Annual Session of the Woman's Auxiliary to the American Medical Association in New York, June 10 to 14, Mrs. Rollo K. Packard, President, presided with Mrs. Carlton F. Potter as convention chairman. The following officers were elected for 1940-1941:

President, Mrs. V. E. Holcombe, Charleston, W. Va.
President-Elect, Mrs. R. E. Mosiman, Seattle.
First Vice President, Mrs. Charles H. Werner, St. Joseph, Mo.
Second Vice President, Mrs. Don A. Epler, Newark, N. J.
Third Vice President, Mrs. Eustace A. Allen, Atlanta, Ga.
Fourth Vice President, Mrs. Arthur C. Jones, Boise, Idaho.
Recording Secretary, Mrs. John L. Bauer, Brooklyn.
Treasurer, Mrs. David W. Thomas, Lock Haven, Pa.

The national membership is 23,524, with sixty-six new auxiliaries this year. Mrs. J. Emerson Noll, chairman of credentials and registration, reported that the registration was 1,321.

California

The Solano County auxiliary, the fourth county organized this year, recently held its first meeting at Vallejo. Dr. Robert Glass Cleland, vice president of Occidental College, was guest speaker of the Los Angeles County auxiliary, April 23. His topic was "The Historian Looks at the Future." Mr. Robin Lampson of the extension department of the University of California reviewed his latest book, "Death Takes a Pair of Wings," at the Santa Cruz County auxiliary recently. The Sonoma County auxiliary at its March meeting heard book reviews by three of its members on "Medicine at the Cross Roads," by Bertram M. Bernheim, M.D., "The Patient's Dilemma," by Dr. Hugh Cabot and a discussion on "Experimentation in Meeting Medical Needs by Voluntary Action" by Martin W. Brown.

Georgia

The woman's auxiliary to the Georgia medical society held its annual meeting in Savannah. Mrs. Eustace A. Allen, the president, reported that last year one new district and seven counties were organized. The membership was increased from 549 to 632 members, the largest paid membership the auxiliary has ever had. Two hundred and ten *Hygeia* subscriptions were obtained and 24,000 copies of health literature on tuberculosis, venereal diseases, heart diseases, cancer, communicable diseases, maternal and child health and malnutrition were distributed. Twenty-two radio health talks were sponsored and 200 announcement blotters and fifty posters of American Medical Association radio programs were distributed; 151 programs on self education on health subjects were held among county auxiliaries; 187 members held the chairmanship of health in other organizations; thirty-nine health films were shown throughout the state, at schools, parent-teacher meetings, orphanages, industrial groups and the like. Twenty-five dollars was contributed during the year to this fund. One hundred and eight public relations programs were sponsored. The student loan fund was increased by \$209, making a total of \$2,079.51 now available for medical students.

Indiana

The Vigo County auxiliary of Terre Haute, with a membership of seventy-eight, has for two years sponsored occupational therapy work in the two Terre Haute hospitals. The salary of the teacher and the materials used are paid for by the auxiliary.

Iowa

The woman's auxiliary to the Iowa State Medical Society held its eleventh annual meeting in Des Moines. Dr. John I. Marker of Davenport gave an address on "Character and Personality Development."

Michigan

At a recent meeting of the Bay County auxiliary, Dr. Otto Ehrlich, an intern in one of the local hospitals, spoke on the life and work of his uncle, Dr. Paul Ehrlich, noted scientist and discoverer of arsphenamine.

Minnesota

The eighteenth annual meeting of the woman's auxiliary to the Minnesota State Medical Association was held in Rochester.

Malcolm McLean, Ph.D., director of the general college of the University of Minnesota, gave an address "Are the Schools or Trial?"

Missouri

Mrs. Paul F. Cole, president of the woman's auxiliary to the Missouri State Medical Association, in her annual report to St. Louis, recently stated that they were proud of their *Hygeia* record, having 155 more subscriptions this year than last year.

Oregon

Mid-Columbia County auxiliary entertained all women's groups in the district at a tea on May 16 at which Dr. John H. Fitzgibbon of Portland, delegate from Oregon to the American Medical Association, was guest speaker.

Texas

At the recent meeting of the Bowie-Miller counties auxiliary Mrs. Ralph Cross, president, presented each member with a cleverly arranged "report card" showing the member's attendance and the work done by the individual. The Bowie County auxiliary was awarded a prize of \$30, given by Dr. Preston Hunt of Texarkana for the auxiliary having the greatest percentage of members who read the *Texas State Journal of Medicine*.

The twenty-second annual session of the woman's auxiliary to the State Medical Association of Texas was held in Dallas in May. Mrs. S. H. Watson, president, presided. Guest speakers were Mrs. Rollo K. Packard, President of the Woman's Auxiliary to the American Medical Association; Dr. L. H. Reeves, Fort Worth, president, and Dr. Preston Hunt, Texarkana, president-elect of the state medical association, respectively. Six new county auxiliaries and one new district were organized during the year, and one district was reorganized. Close to 500 subscriptions to *Hygeia* were sold.

Mrs. Scott C. Applewhite, San Antonio, has resigned as president of the auxiliary of the State Medical Association of Texas because of illness in her family; she will be succeeded by the first vice president, Mrs. William Hibbitts, of Texarkana. Mrs. Leslie Moore, Dallas, will serve as first vice president and Mrs. Ralph Cross of Texarkana as corresponding secretary. The state executive board meeting, scheduled to meet in July in San Antonio, has been postponed until September 10 and will be held in Fort Worth, with Mrs. Hibbitts as hostess.

Wisconsin

The woman's auxiliary to the Fond du Lac medical society at its meeting in May voted an appropriation for the girl scout troop which it sponsors and made plans to send several girls to summer camp. Money was donated to the Red Cross emergency fund.

Experiments in prepaid medical care in Douglas, Milwaukee and Rock counties were outlined by Mr. G. B. Larson, assistant secretary of the State Medical Society of Wisconsin in a lecture sponsored by the women's auxiliary to the Outagamie County Medical Society, May 27, at Appleton. More than 300 women representing the medical auxiliaries of Outagamie, Winnebago and Brown counties, as well as a large number of members of Appleton women's organizations, were present.

The Portage County Medical Society and the crippled children's division of the state department of public instruction recently conducted an orthopedic clinic at Stevens Point. Mrs. F. A. Marrs was in charge of local arrangements. Two hundred handicapped persons, ranging in age from infancy to the age of 21, were examined. Mrs. W. F. Cowan, another auxiliary member, was in charge of the noon luncheon, at which 370 persons were served.

Rock County auxiliary recently celebrated its tenth anniversary with a dinner in Janesville. Informal talks on the past history and future aims of the auxiliary were given by Mrs. C. N. Neupert of Madison, Dr. Jessie Allen of Beloit, Mrs. F. W. Pope of Racine, state president, and Mrs. C. A. Harper of Madison, present chairman of the archives and a past president of the state organization.

An auxiliary to the Sauk County Medical Society was organized, May 28. The wives of eleven physicians were present.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARIZONA

Harlow Brooks Clinical Conference.—The Fifth Harlow Brooks Memorial Navajo Clinical Conference will be held at the Sage Memorial Hospital, Ganado, August 26-28. Among the speakers will be:

- Dr. Fred H. Albee, New York, Biophysiological Relations of Treatment in Fractures of the Neck of the Femur; also Mosaic Inlays and Peg Grafts in Reconstruction Surgery.
- Dr. Max Thorek, Chicago, Electrosurgical Obliteration of the Gall-bladder.
- Dr. Henry H. Turner, Oklahoma City, Present Status of Endocrinology in General Practice.
- Dr. Charles E. Futch, Los Angeles, Sinus Pathology: When to Operate.
- Dr. William H. Daniel, Los Angeles, Infective Lesions of the Colon, as Ulcerative Colitis and Other Lesions.
- Dr. Ralph F. Palmer, Phoenix, The Evolution and Present Status of the Relationship Between Organized Medicine and the Industrial Commission in the Administration of the Workmen's Compensation Law in Arizona.
- Dr. Edwin Forrest Boyd, Los Angeles, Some Phases of Geriatrics.
- Dr. Buell H. Sprague, Los Angeles, Some Unpublished Ideas on Thyroid Surgery.

CALIFORNIA

Credit Information Service.—A central medical credit information service is being organized by the San Francisco County Medical Society for the use of members. This unit is the first step toward establishing a medical business center operated by the society, making available various services to members.

Personal.—Dr. Edwin S. Bennett, for more than four years medical director of Olive View Sanatorium, Olive View, has been appointed superintendent of the Los Angeles County General Hospital.—Dr. Karl Chester Gummess, Los Angeles, has been appointed medical director for the state relief administration, succeeding Dr. Albert E. Larsen, San Francisco, who resigned recently to become medical director for the Agricultural Workers Health and Medical Association.—Dr. Frank B. Young, Long Beach, has been made a member of the state board of health.

Society News.—Dr. Martin W. Debenham, San Francisco, discussed "Immediate Suturing of Tendons in Traumatic Wounds" before the Plumas-Lassen-Modoc Counties Medical Society in Susanville recently.—The Yuba-Sutter Counties Medical Society has been reorganized and will henceforth be known as the Yuba-Sutter-Colusa Counties Medical Society. The new society was recently addressed by Dr. Sterling Bunnell, San Francisco, on "Reconstruction of Hands."—Dr. Arthur A. Marlow, La Jolla, discussed "Leukemia and Related Disorders of the White Blood Cell" before the Hollywood Academy of Medicine, July 11.

ILLINOIS

Health Exhibits at State Fair.—The state health department will present two new exhibits in its annual health exposition at the Illinois State Fair in Springfield, August 17-25, in cooperation with the Public Service Company of Northern Illinois. One will depict the hazards of night driving and the inability of the eye to cope with these hazards. Dioramas, transparencies, working models, apparatus, street and highway lighting units and the scientific equipment used in research on the subject will be shown. The other exhibit shows 2,000 years of progress in the evolution of resuscitation from drowning, gas asphyxiation and electric shock. Dr. Hart E. Fisher, Chicago, chief surgeon of the public service company, will be in charge. Other features of the health department's exposition will be free blood tests, medical examination of children, exhibits on "contact" diseases and nutrition. A motion picture program will be presented daily.

Chicago

Rural Health Service.—Dr. Edward A. Piszczek has been temporarily appointed head of a new county health service for unincorporated areas and villages in Cook County which have no public health facilities. According to the newspapers, July 19, the appointment was believed to be for sixty days, when

a civil service examination is expected to be held to select a permanent head of the service. The new service was created in June with county and state funds.

Juvenile Home Psychiatric Department Installed.—New quarters for the department of psychiatry of the Juvenile Detention Home with expanded services in the treatment of these cases have been installed on the third floor of the court building at Ogden Avenue and Roosevelt Road, newspapers report. The new arrangement, under the direction of Dr. Paul L. Schroeder, state criminologist, will provide seven private offices for consultation with the youths brought in for mental examination, a staff office, ample space for clerical workers and records and waiting rooms. Instead of a large public waiting room, the waiting space has been divided into cubicles each accommodating four persons. Entrance to consultation offices will be private. All children will be given a physical examination in the court building instead of being taken to their neighborhood clinics as heretofore, making possible a complete medical and psychiatric report within twenty-four hours.

IOWA

Typhoid Carriers.—As a result of field investigations by the state department of health and efforts of attending physicians, five typhoid carriers have been brought under control in Iowa thus far in 1940, according to the state medical journal. In each instance an active case of the disease led to the suspicion of a carrier among the close contacts, it was stated. In one Iowa town several cases of typhoid were reported during the last two years. An investigation proved that a neighbor of the patients was harboring typhoid organisms.

Course on Care of the Newborn.—A three day post-graduate course on the care of the newborn will be held at the University Hospital, Iowa City, September 17-19, under the auspices of the state department of health and the State University of Iowa College of Medicine. The course will be limited to seventy-five physicians and no applications will be accepted after September 10. Lecturers will include:

- Dr. Julius H. Hess, professor of pediatrics at the University of Illinois College of Medicine, Chicago.
- Dr. Horton R. Casparis, professor of pediatrics at Vanderbilt University School of Medicine, Nashville, Tenn.
- Dr. Irvine McQuarrie, professor of pediatrics at the University of Minnesota Medical School, Minneapolis.

Dr. Edward N. Anderson, Iowa City, football coach at Iowa, will speak Tuesday evening.

MAINE

Society News.—Dr. Wilfrid J. Comeau, Bangor, addressed the Aroostook County Medical Society in Houlton, June 13, on "Cardiac Drugs—Their Use and Abuse."—The Oxford County Medical Association was addressed in Bethel recently by Drs. George L. Pratt, Farmington, and Harry Eugene Macdonald Jr., Portland, on organization affairs and head injuries, respectively.—Dr. Neil W. Swinton, Boston, discussed diseases of the rectum and anus before a recent meeting of the Piscataquis County Medical Association in Guilford.

MICHIGAN

New Chief in Charge of Tuberculosis.—Dr. Thaddeus M. Koppa, member of the staff of the bureau of epidemiology, state department of public health, since February 1939, has been appointed director of the tuberculosis division of the bureau. The division was formerly in charge of Dr. Arthur W. Newitt, who is now director of the bureau of epidemiology. Before coming to Michigan, Dr. Koppa served as director of the bureau of communicable diseases of the Wyoming State Department of Health.

Pollen Survey.—Arrangements have been completed for the organization in Michigan of one of the first general pollen surveys ever sponsored by a state health department. Thirty-nine cities will participate in the program, which has the support of northern Michigan recreational centers and the tourist and resort associations. B. H. Grigsby, instructor in botany at Michigan State College, has been engaged by the laboratories of the health department to read the pollen slides which will be exposed daily at all of the thirty-nine survey stations. Rudolph Lang has been appointed field agent for the survey. Control stations are to be established in southern Michigan where the pollen pollution is known to be heavy, probably at Detroit, Flint, Lansing, Grand Rapids, Grand Haven, St. Joseph, Coldwater and Hillsdale. Data obtained from these stations will serve as a check on that obtained from northern

Michigan centers. The health department points out in its bulletin that knowledge of the types and the distribution of pollen throughout the state will aid hay fever sufferers in selection of resorts where relief may be obtained.

MISSISSIPPI

State Journal Honors Early Physician.—The *Mississippi Doctor* for July was dedicated to Dr. John W. Monette, Washington, 1803-1851, the first physician in the state to be placed in the Hall of Fame of the state department of archives and history. At the recent annual session of the Mississippi State Medical Association a special display of memorabilia concerning Dr. Monette was shown under the joint auspices of the medical library of the state board of health and the state department of archives and history. The exhibit included a life-size portrait of Dr. Monette and was presented to the hall of fame during special ceremonies by the state medical association. In making the presentation Dr. James P. Wall, Jackson, then president of the association, identified Dr. Monette as physician, trail blazer in the control of yellow fever, and historian. Judge Gerard Brandon, Natchez, grandson of Dr. Monette, presented a biographic sketch of the physician. Dr. Monette received his preliminary medical education from his father, Dr. Samuel Monette, also a physician. He completed his medical course at Transylvania University, Lexington, Ky., receiving his diploma on March 21, 1825. Although Dr. Monette wrote extensively on many subjects, his chief claim to distinction as a student and historian rests on his "Valley of the Mississippi," published in two volumes by Harper & Brothers in 1846. His greatest literary undertaking was his "Physical Geography of the Mississippi Valley." He died before the work was published.

NEW YORK

Transfusion Service Organized.—A complete transfusion service to make available better treatment and to make possible further research was inaugurated July 1 in the Hazard Laboratory of Memorial Hospital, Syracuse. The service will be available to the University, Memorial, City and Psychopathic hospitals under the direction of Dr. John B. Alsever. It was made possible by an initial grant of \$5,000 from the Hendricks Research Fund of the Syracuse University Medical College. It will function on a twenty-four hour basis and will provide preserved adult blood, fresh adult blood, blood plasma and preserved placental blood. A list of blood donors will also be maintained, but it is expected that suitable preserved blood will usually be available, and the patients can repay the service by furnishing blood through friends and relatives, regardless of their blood group. Professional donors will be paid as at present, but otherwise patients will pay only a small service charge.

New York City

Theodore Weicker Dies.—Theodore Weicker, chairman of the board of E. R. Squibb & Sons, New York, pharmaceutical manufacturers, died in Greenwich, Conn., August 7, aged 79. Mr. Weicker, a native of Germany, came to America in 1887 and immediately became a citizen. On his recommendation the German firm of E. Merck established a New York branch, in which he was managing partner for fifteen years. Aside from conducting his business he took degrees in pharmacy and pharmaceutical chemistry. In 1905 he joined with the late Lowell M. Palmer to buy the business of E. R. Squibb & Sons, Dr. Squibb having died several years previously. At a time when the American market was flooded with nostrums and quack remedies, Mr. Weicker conceived the idea of an advertising campaign to the public under professional supervision to disseminate information about pharmaceutical products. He directed the campaign with the now widely known slogan "The priceless ingredient of every product is the honor and integrity of its maker," according to a statement issued at his death. The opening of the Squibb Institute for Medical Research at New Brunswick, N. J., in 1938 was the realization of a lifelong dream of Mr. Weicker, the statement said.

NORTH CAROLINA

Society News.—Dr. Virgil P. W. Sydenstricker, Augusta, Ga., will discuss pellagra before the Buncombe County Medical Society, Asheville, August 19.—Dr. John Shelton Horsley, Richmond, Va., addressed the Halifax County Medical Society, Roanoke Rapids, June 15, on cancer.—Dr. William Raney Stanford, Durham, addressed the Alamance-Caswell Counties Medical Society, Union Ridge, July 9, on "Idiopathic Ulcerative Colitis."

Plans for New School.—At a joint meeting of the trustees of the North Carolina Baptist Hospital and of Wake Forest College, July 18, contracts were let for the new Bowman Gray School of Medicine of Wake Forest College in Winston-Salem and additions to the hospital amounting to \$701,572. It is estimated that it will take a year to complete the buildings. The school will also have a fifty bed hospital which has been leased to it by the Junior League of Winston-Salem for teaching and research in psychiatry. The school will assume responsibility for the professional conduct of the child guidance clinic conducted by the league.

OHIO

Dr. Dunham Honored.—Dr. Henry Kennon Dunham, Cincinnati, who recently retired as medical director of the Hamilton County Tuberculosis Sanatorium, was honored with a dinner, June 12, given by four organizations with which he has been identified: the Christmas Seal Committee of Cincinnati and Hamilton County, of which he is president; the Cincinnati Anti-Tuberculosis League; the faculty of the University of Cincinnati College of Medicine, and the staff of the sanatorium. Dr. Stanley E. Dorst was toastmaster and the speakers were Drs. Paul P. McCain, Sanatorium, N. C.; William Muhlberg and George E. Rockwell, Cincinnati; Robert G. Paterson, Ph.D., Columbus, and Col. Clarence O. Sherrill, city manager of Cincinnati. A plaque bearing a likeness of Dr. Dunham and a tribute to his efforts has been placed in the lobby of the sanatorium.

PENNSYLVANIA

District Meeting.—The Tenth Councilor District of the Medical Society of the State of Pennsylvania held a meeting in Pittsburgh, July 17. Clinics were presented at Mercy and Western Pennsylvania hospitals and at the Falk Clinic. Speakers on the scientific program were Drs. Henry J. John, Cleveland, on "The Treatment and the Progress of Diabetic Children" and William H. Guy, Pittsburgh, "Clinical Manifestations of Syphilis with Suggestions on Treatment." Dr. Nathan A. Kopelman, New Kensington, a member of the state society's committee on industrial health, discussed "The Present Status of Industrial Medicine"; Dr. J. West Mitchell, Pittsburgh, reported the work of the commission on diabetes and Dr. John O. Bower, Philadelphia, a survey on acute appendicitis mortality by that commission. At a luncheon session Dr. Chauncey L. Palmer, Pittsburgh, discussed new state laws affecting physicians.

Philadelphia

Fellowships for Training in Criminal Psychiatry.—The joint medicolegal committee of the Philadelphia County Medical Society and the Philadelphia Bar Association announces that two fellowships for training in criminal psychiatry are open to candidates of suitable qualifications for terms of two years beginning in October. An appropriation of \$14,000 from the Commonwealth Fund of New York has made possible the installation of the "Pennsylvania Plan" for intramural training in penal psychiatry, described in *THE JOURNAL*, July 13, page 135. The plan is to be administered by a committee representing three departments of the University of Pennsylvania—the department of psychiatry, the graduate school and the law school—and the Eastern State Penitentiary. Those interested in making application for the fellowships should direct their inquiries to Dr. Philip Q. Roche, secretary of the committee on medicolegal fellowships, 255 South Seventeenth Street, Philadelphia.

TEXAS

Society News.—Dr. Ralph Bowen, Houston, addressed the Jefferson County Medical Society, Port Arthur, June 10, on "Practical Management of Allergic Problems in General Practice."—Dr. Robert L. Moore, Dallas, lectured on pediatric subjects and Dr. Daniel Truett Gandy, Houston, on diagnosis and treatment of syphilis at a meeting of the Tenth District Medical Society in Liberty, June 28.

Personal.—Dr. John W. E. H. Beck, Austin, director of local health services with the state board of health for the past three years and previously director of maternal and child welfare for one year, has resigned to return to private practice in DeKalb, it is reported.—Dr. John M. Hooper, Austin, recently succeeded Dr. James J. Croley as director of the McKinney-Collin County health unit.—Dr. James H. Stephenson has resigned as superintendent of the Jefferson Davis Hospital, Houston, according to *Hospitals*. Dr. Sidney B. Hardy is acting superintendent.—Dr. Berthold H. Estess, New Braunfels, is in charge of a new health unit for Jasper and Newton counties, with headquarters in Jasper.

WASHINGTON

State Medical Meeting at Tacoma.—The fifty-first annual meeting of the Washington State Medical Association will be held at the Winthrop Hotel, Tacoma, August 25-28, under the presidency of Dr. Warren B. Penney, Tacoma. Speakers at the scientific sessions will include:

- Dr. Kenneth K. Sherwood, Seattle, Indications and Contraindications for Gold, Vitamin C, Sulfanilamide and Thiamine Therapy for Chronic Arthritis.
Dr. Lyle A. Greenwood, Bellingham, The Newer Drugs in the Treatment of Infections.
Dr. Simeon T. Cantril, Seattle, Malignant Diseases of the Head and Neck.
Dr. Milo T. Harris, Spokane, Carcinoma of the Uterus.
Dr. Edwin G. Bannick, Seattle, Newer Procedures in the Treatment of Pneumonia.
Dr. Cassius H. Hoffrichter, Seattle, Clinical Evaluation of Standard Protamine Zinc and Crystalline Insulin.

The annual golf tournament will be held at the Tacoma Golf and Country Club Monday, August 26. The woman's auxiliary will hold its meeting parallel with the state association, with sessions at the auditorium of the Medical Arts Building.

PUERTO RICO

Influenza Epidemic.—The department of health of Puerto Rico reports a widespread epidemic of influenza on the island, reaching its climax in July. More than 52,000 cases were reported to the department in June and July. According to a report in the *New York Times*, there were about 200 deaths. Dr. John W. Oliphant of the U. S. Public Health Service was detailed to make an epidemiologic study and Dr. Edwin H. Lennette of the International Health Division of the Rockefeller Foundation is conducting research on the virus and other aspects of the disease.

University News.—The School of Tropical Medicine of the University of Puerto Rico under the auspices of Columbia University offered its third annual vacation course in tropical medicine for undergraduate students June 18 to July 26. Three students from the University of Cincinnati College of Medicine, two from the College of Physicians and Surgeons of Columbia University, New York, and two from the Long Island College of Medicine, Brooklyn, took the course, directed by Thomas J. LeBlanc, Sc.D., Cincinnati, in conjunction with George W. Bachman, Ph.D., director of the school of tropical medicine. Laboratory and field work occupied the first week; pathology, mycology and clinical features of tropical diseases the next four weeks, and one week was devoted to demonstration in the insular health department under the direction of Dr. Garrido Morales, health commissioner.

GENERAL

American Congress of Physical Therapy.—The nineteenth annual meeting of the American Congress of Physical Therapy will be held in Cleveland, September 2-6, with headquarters at the Hotel Statler. Mornings will be devoted to instruction courses, and scientific sessions will be held in the afternoons and evenings. Among the speakers will be:

- E. K. Jett, chief engineer of the Federal Communications Commission, Washington, D. C., Radio Interference Problems Resulting from the Operation of Electric Lines.
Dr. Theo Drug division, U. S. Food and the New Food, Drug and Cosmet
Dr. William Bierman, New York, The Penetrative Effect of Cold.
Dr. George W. Crile, Cleveland, Normal and Pathologic Electrophysiology.
Dr. William F. Petersen, Chicago, The Effect of Cold, Heat and Weather on the Human Being.
Drs. Donald L. Rose, Walter M. Simpson and Herbert Worley Kendall, Dayton, Ohio, Artificial Fever Versus Combined Fever-Chemotherapy in Gonococcal Infections Refractory to Sulfanilamide.
Dr. Edgar V. Allen, Rochester, Minn., Treatment of Diseases of the Peripheral Blood Vessels.
Dr. Charles E. Irwin, Warm Springs, Ga., Mechanical Aids for the Severely Handicapped Poliomyelitis Patient.
Dr. Frank H. Krusen, Rochester, Minn., Present Status of Ultraviolet Irradiation.
Dr. Richard E. Reilly, Minneapolis, Histamine Iontophoresis in Chronic Arthritis.

Included on the program of the section on eye, ear, nose and throat is a symposium on audiometry and hearing aids to be presented by Howard A. Carter, B.S. in M.E., secretary, Council on Physical Therapy, American Medical Association, Chicago; Drs. Charles E. Kinney, Cleveland, and G. Henry Mundt, Chicago.

Fake Insurance Salesman.—A Louisiana physician reports that a man posing as a "special agent" of the Mutual Benefit Health and Accident Insurance Company, Omaha, is visiting physicians who already have policies with this firm and selling them additional insurance. In reply to a complaint, the com-

pany informed the physician that the salesman described was not in its employ at this time and that other reports of his activities had been received. He appears to be operating in the Gulf Coast states. In the case reported he used the name "Amos L. Rogers." He appeared to be from 35 to 40 years old, weighed about 200 pounds and was about 6 feet tall.

Grants for Cancer Research.—The National Advisory Cancer Council at a meeting, June 25, at the National Cancer Institute in Bethesda, Md., awarded grants for research on cancer. The grants were: Washington University School of Medicine, St. Louis, \$16,000; Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York, \$3,300; Barnard Free Skin and Cancer Hospital, St. Louis, \$5,000; University of California Medical School, San Francisco, \$5,000, and American College of Surgeons, Chicago, \$5,900. Among reports presented at the meeting was a special one on protection of personnel working in cancer clinics against injury from exposure to radium, x-rays and neutrons, by Carl Voegtlin, Ph.D., chief of the cancer institute.

LATIN AMERICA

Society News.—The fourth Pan American Conference of Directors of Public Health will be held in Rio de Janeiro, Brazil, in 1942 and the fourth Pan American Conference of Leprology also in Rio de Janeiro in 1945.—Dr. Eduardo de Moraes was recently elected president of the Medical Society of Bahia, Brazil; Drs. Eduardo Vidal da Cunha and Pedro Ferreira, vice presidents, and Jose de Figueiredo, general secretary.—The eighth congress of the Pan American Medical Association will be held in Buenos Aires in 1941 under the presidency of Dr. Jose Arce, Buenos Aires. Previous congresses have been in Habana, Panama, Mexico, Dallas, Antillas Menores, Rio de Janeiro and São Paulo and again in Habana.—The International College of Surgeons will hold its next meeting in Mexico City, Aug. 10-13, 1941, according to an announcement in *Medicina* (Mexico).

CORRECTION

Acetanilid Instead of Acetophenetidin.—In the twelfth line of the editorial entitled "Double Barreled Self Medication" in *THE JOURNAL*, August 3, page 387, the word "acetophenetidin" should be "acetanilid."

Government Services

War Department Needs Pathologist and Veterinarian

The U. S. Civil Service Commission announces open competitive examinations for a pathologist (medical) and a veterinarian for the Chemical Warfare Service, War Department, Edgewood Arsenal, Md. The duties of the pathologist will be to examine specimens of pathologic tissue, to interpret and determine gross and microscopic changes produced in men and animals by chemical warfare agents and other toxic agents and to examine and interpret the physical effects of preventive and therapeutic measures for these changes. The veterinarian's duties will be to determine toxic effects as shown from gross pathologic changes induced by various agents in animals, to interpret the transfer of data obtained from animal experiments to man, to supervise the health and treatment of experimental animals and to perform related duties. Competitors will not be required to report for examination at any place but will be rated on the extent of their education, on the extent and quality of their experience relevant to the duties of the position applied for and on their fitness, on a scale of 100, such ratings being based on competitors' sworn statements in their applications and on corroborative evidence. For pathologist, applicants must have completed a four year college course with major study in biology or chemistry or must have graduated from a recognized medical school and must have had appropriate experience in pathology, either human or animal. For veterinarian, applicants must have a degree in veterinary medicine or meat inspection or disease control work. Detailed requirements and application forms may be obtained from the secretary of the board of civil service examiners at any first or second class postoffice or from the U. S. Civil Service Commission, Washington, D. C. Applications must be on file in the commission's Washington office not later than September 9, if received from states east of Colorado, and not later than September 12, if received from Colorado and states westward.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 20, 1940.

A Revolutionary Step in Diet: The Fortification of Bread

In the House of Commons Mr. Boothby, secretary to the Ministry of Food, stated that 90 per cent of our food imports were purchased by the government generally at little over pre-war prices but that there was a substantial increase in the cost of transportation. Adequate supplies of meat for the masses at reasonable prices would be secured. Scientists said that meat did not have great advantages dietetically. That might be, but it had a psychologic value. It made people happy. When the threatened attack on these islands in the next few months was defeated we could increase the distribution of tea and sugar and perhaps fats during the winter months. To keep down the cost of living the government was subsidizing foods—bread and flour to the weekly rate of \$2,975,000, home produced meat \$1,575,000, bacon \$500,000. In addition the milk scheme of selling below cost to poor families cost \$37,500,000 per annum. We had stocks of food sufficient for many months in the unlikely event of heavy losses at sea.

THE FORTIFICATION OF BREAD

The minister then dealt with bread, about which there has been much controversy. He said that nutritional experts stressed the importance of wholemeal bread as compared with white bread. One reason why the manufacture of white flour had not been suspended was that most consumers preferred white bread. For security the government had greatly increased not only our stocks of wheat but also the proportion held in the form of flour. The keeping qualities of white were greater than those of wholemeal flour and therefore our reserve was kept in that form. To overcome the main objection to white flour—its deficiency in vitamins—the government intended to fortify it by adding vitamin B₁ and also to introduce a small quantity of calcium salt. Some months must elapse before sufficient vitamin B₁ was available. The public would then have the choice of fortified white bread or wholemeal bread at the same price. This was a revolutionary step and in conjunction with the milk scheme would lay the foundation of a nutritional policy. The decision to fortify white bread was taken after a report of the scientific committee under the chairmanship of Sir William Bragg (physicist and president of the Royal Society) had been received. It was a satisfaction that the government's import policy had been endorsed by the committee, but he hoped that this would not go to the heads of the scientists. The government had to consider the human man, who might get all the vitamins he required from a diet of vegetables, wholemeal bread, milk and cheese but would be most unhappy. He once attended an "Oslo meal" and came away full of vitamins, but that did not prevent a disturbed night. They were not cranks at the Ministry of Food. In war, food was the most fundamental and the most decisive factor.

Detection of Tuberculosis in Recruits

A medical advisory committee under the chairmanship of Lord Horder, appointed to report on methods of detecting early tuberculosis in men called up for military service, has made the following recommendations: 1. Every recruit at his examination by the medical board should be required to sign a declaration indicating whether or not he has suffered from tuberculosis. 2. District medical officers should be required to furnish a notification of every man of military age whose name appears on the registers kept under the public health (tuberculosis) regulations, so that this notification may be presented when he

attends for examination. 3. The attention of medical board should be directed to the value of x-ray examination of the chest in the detection of early cases of pulmonary tuberculosis and they should be urged to use it in the case of recruits whose medical history or chest condition indicates even a remote possibility of the disease. 4. Medical boards should be advised to consider this special examination in cases of general ill health without definite clinical signs and also in those cases of effort syndrome in which there is no definite indication of psychic or cardiac cause. The committee inquired into the possibility of examining radiologically the chests of all recruits. For large numbers of men this could be done only by miniature radiography. While admitting that the method represents an ideal to be aimed at, the committee says that the necessary apparatus and a sufficient number of expert examiners would not be available for some months. The method is therefore impracticable at present. But the Admiralty and Air Ministry are about to make a trial of miniature radiography, and the committee await the results with interest.

Proposed National Scheme of Fracture Clinics

Since the war of 1914-1918, in which the late Sir Robert Jones was given direction of orthopedic surgery in the military hospitals, increased attention has been given to the treatment of fractures. In a memorandum to the Ministry of Health the British Hospitals Association proposes that the government set up a special committee to promote a fracture scheme in conjunction with the hospitals. The state is asked to make an initial grant of \$1,250,000 toward the cost, and the association would draw up a plan to provide the nucleus of an organization and suggest the personnel. The government in 1936 set up a rehabilitation committee to consider the facilities available for the special treatment which cases of fracture require. In 1939 this body recommended a scheme for setting up fracture services throughout the country and made proposals which it hoped would enable the voluntary hospitals to finance them. The probability of heavy casualties is now thought to call for the intervention of the state in setting up such clinics. But it is held that it would be a mistake for the state to set up its own clinics otherwise than in cooperation with the voluntary hospitals, which treat 90 per cent of fractures of civil life. All that is required is reorganization and extension of existing services. Their fracture departments covering surgical treatment, physical therapy and remedial exercises would be placed under the control of a specialist with a team of assistants, radiographers and nurses. Special equipment would have to be provided.

It is calculated that the cost of setting up the additional fracture services at existing hospitals would be about \$10 a case. This would not be the total cost of treating the fractures but the cost of improvement of the present services. The number of fractures treated annually at the hospitals is about 200,000 in peace time; in war time an increase to 500,000 is to be expected. Only eighty-six hospitals in Great Britain apart from twenty-four orthopedic hospitals have fully organized fracture services. Probably only 100,000 cases annually can obtain adequate treatment in fracture services at present. The immediate object is the establishment of a fracture service in each area. Other needs are rehabilitation or vocational training centers and settlements where those too incapacitated to resume their ordinary work can be housed and taught crafts.

The Bureau of Human Heredity

More than three years ago a Bureau of Human Heredity was established in London for the purpose of helping workers in human genetics. The chairman is Prof. R. Ruggles Gates, F.R.S. It now has a collection of books and reprints amounting to more than 3,000, which is indexed by a system of cross reference running to many thousands of cards, so that a worker

can easily turn up any point. Specialist inquirers can be quickly supplied with bibliographic references. The work of the bureau has automatically brought into being a comparative definition of terms used variously by different schools. A series of more than 7,000 terms occurring in genetic literature has been arranged in a synonym index, which could serve as a basis for a lexicon of terminology.

The work of the bureau has indicated the need for several investigations and has pointed the way to them. One is a complete collection and analysis of all material on genetics in relation to cancer, and the same holds for tuberculosis. In view of their importance these two surveys have begun. Some suggested investigations have special reference to the war. Among these are allergic conditions in connection with prophylactic inoculation of the fighting forces, neuroses under war strain, physiologic constitution in the choice of air pilots and constitutional factors in wound therapy.

BUENOS AIRES

(From Our Regular Correspondent)

July 5, 1940.

Regulations on the Appointment of Hospital Physicians

The selection of the medical personnel of municipal hospitals in Buenos Aires has now been regulated. The title of hospital physician will be accorded only to physicians of Argentine birth who have had experience in recognized hospitals. The order of advancement is as follows: assistant physician, associate physician, hospital physician, resident physician, head of hospital service and director of the hospital. Appointments are based on competitive examinations. Hospitals are divided into medical clinics, surgical clinics and the specialties, including the departments of orthopedic surgery and traumatology, neurologic surgery, child surgery, infectious diseases, tuberculosis, gynecology, ophthalmology, otorhinolaryngology, neurology, psychiatry, diseases of nutrition, diseases of the blood, dermatology and syphilology, proctology, radiology and physical therapy. The laboratories comprise laboratories for clinical and microbiologic analysis, for pathologic anatomy, hematologic laboratories and a central laboratory for clinical and microbiologic analysis and hygiene. The order of advancement is the same here as for the hospitals; the title, however, in each case indicates the connection with a laboratory. Physicians are assigned on the basis of one hospital physician to every twenty beds, one associate physician to ten beds or fewer and three assistant physicians to each associate physician. The central laboratories and those of the radiology and physical therapy divisions each have a head and in addition two hospital physicians, three associate physicians and five assistant physicians. The qualifications for the various hospital service orders have been worked out in detail. An examining board, consisting of the director of the hospital and two divisional heads, chosen by lot, pass on the training, degree and scientific contributions of the applicant. An associate is required to have had five years' experience as assistant in the specialty for which he is an applicant. The full hospital physician must have served five years as associate and must also submit to an oral examination that embraces both theory and practice of medicine. The examining board consists of five service heads. Only associate physicians of general surgery are admitted as candidates for the position of resident physician. They are also examined in operative technic. Appointments are valid for three years and may be renewed for two successive periods. They permit subsequent hospital connection as associates. A vacancy in the headship of a ward is open first of all to heads of wards of other hospitals. The examining board consists of the heads of five other wards who have served at least five years. It passes *inter alia* on the applicant's ability to organize the hospital and polyclinic service, the conduct of hospital records, supervision of the rationalized

nutritional needs of the patients, and so on. Any remaining vacancy is open to hospital physicians who have served more than five years in the same specialty. An examination is required covering a clinical case determined by lot twenty-four hours previously. If the vacancy is in the field of surgery, the examining board observes the applicant at work. The appointment is valid for ten years and may be renewed for five years more. The retiring age is 65. Hospital directors are selected on the same plan. If a vacancy remains, heads of wards with a ten year service are eligible.

Physicians who change their specialty are subject to certain regulations. They are appointed on competitive examination and are required to serve five years in the new specialty. The heads of the wards elect a clinical head from among the full or associate physicians, as the case may be. He serves for two years and is eligible for reelection. The head of the polyclinic connected with the hospital must have the rank either of medical physician or of clinical head. Physicians may also be assigned on honorary appointments.

Postgraduate Lectures

The Asociación médica Argentina has organized on a more extensive plan the lecture courses offered last year. Sessions meet in the evening and are held monthly. A definite subject chosen for each evening service is discussed by experienced clinicians. In the first session recently held under the chairmanship of Prof. Carlos Mainini, its president, the sulfonamides were discussed. Prof. E. Hug of Rosario introduced the subject with a pharmacologic lecture. Subjects for future discussion include hypertrophy of the prostate, erythremia, endocrine preparations in ovarian disturbances, shock and collapse therapy in pulmonary tuberculosis. Similar lectures are given in the national polyclinic for diseases of the digestive apparatus.

Personals

The Liga Argentina contra el reumatismo, under the presidency of Dr. Aníbal Ruiz Moreno, conferred honorary membership on Drs. Walter Bauer, Ralph Boots, Russel L. Cecil, Martin Henry Dawson, Richard Freyberg, Marshall Hall, William Kerr, J. Albert Key and Loring T. Swaim.

Under the auspices of the Argentine Radiologic Society (Sociedad Argentina de Radiología) the first radiologic congress will be held in Argentina September 23-24.

Prof. Angel H. Roffo, well known Argentine cancerologist, was made an honorary doctor by the University of Guatemala.

Prof. Evandro Chagas gave several lectures on visceral leishmaniasis in the institute of infectious diseases of the Faculty of Medicine of Buenos Aires.

Marriages

BEN ROLAND WILTBERGER, Detroit, to Miss Helen Elizabeth Slack of Columbus, Ohio, June 10.

DONALD DWIGHT COOPER, Towson, Md., to Miss Margaret Matthews of Roanoke, Va., July 15.

JACK CHESNEY, Knoxville, Tenn., to Miss Helen Wallace McColl of Bennettsville, S. C., July 20.

JOSEPH AUGUSTINE LUNDY, Oxford, Mass., to Miss Maude Marion McKewen of Worcester, July 17.

JAMES THOMAS GREEN to Miss Mary Wright Shand, both of Columbia, S. C., June 4.

NORMAN OLIN EADDY to Miss Dorothy Compton, both of Sumter, S. C., May 29.

HARRY GAMBILL STANBAUGH, Ashland, Ky., to Mrs. Cleo Eubank Ehrlich, June 8.

ARTHUR A. DAVIDMAN, Rocky Mount, Va., to Miss Tamara Zanoft in Baltimore, July 7.

HENRY S. CHRISTIAN, Three Notch, Ala., to Miss Mac Hall in Midway, July 20.

Deaths

Sigard Adolphus Knopf ☉ New York; Bellevue Hospital Medical College, New York, 1888; Université de Paris Faculté de Médecine, France, 1895; professor of medicine, New York Post-Graduate Medical School, from 1908 to 1920; honorary director of the Gaylord Farm Sanatorium, Wallingford, Conn.; visiting physician to the Riverside Hospital from 1904 to 1923; consulting physician to Sanatorium Gabriels, Gabriels, N. Y., West Side Hospital, Scranton, Pa., and of the Bruchesi Institute, Montreal; a founder of the National Tuberculosis Association, and the New York Tuberculosis and Health Association; honorary member of the American Association for Thoracic Surgery; a government delegate to the International Prison Congress in Budapest and the International Tuberculosis Congress in Paris; vice president of section V of Tuberculosis Congress in Washington in 1908; delegate to the International Congress on School Hygiene in Buffalo in 1913; in 1898 received the Alvarenga Prize awarded by the College of Physicians of Philadelphia; in 1932 represented the United States at the congress of the International Union Against Tuberculosis at The Hague; served during the World War; author of "A History of the National Tuberculosis Association," and of "Heart Disease and Tuberculosis," published in 1936; aged 82; died, July 15, in the Mount Sinai Hospital.

Frederick Gault Finley, Montreal, Que., Canada; McGill University Faculty of Medicine, Montreal, 1885; emeritus professor of medicine and at one time dean at his alma mater; past president of the Montreal Medico-Chirurgical Society; member of the Association of American Physicians; served with the Canadian Army Medical Corps during the World War; was connected for many years with the Montreal General Hospital of which he was consultant as well as of the Royal Victoria and the Children's Memorial hospitals; was chairman of the medical board of the Jewish General Hospital; aged 78; died, July 6.

Vaughan Quaine Bonham, Fayette, Mo.; University of Nashville (Tenn.) Medical Department, 1877; Vanderbilt University School of Medicine, Nashville, Tenn., 1883; member of the Missouri State Medical Association; past president of the Missouri Public Health Association; in 1910 was appointed registrar of birth and death certificates for Missouri; at one time member of the board of managers of the State Hospital, Number 1, Fulton, Mo.; aged 83; died, June 23, in the Lee Hospital of a fractured hip and chronic myocarditis.

Robert Roy Hampton ☉ Salt Lake City; College of Physicians and Surgeons, School of Medicine of the University of Illinois, Chicago, 1900; member of the American Academy of Ophthalmology and Otolaryngology, American Laryngological, Rhinological and Otolological Society, and the Pacific Coast Oto-Ophthalmological Society; fellow of the American College of Surgeons; on the staff of St. Mark's Hospital; aged 65; died, July 12, of coronary occlusion.

P. Calixte Dagneau, Quebec, Que., Canada; M.B., Laval University Faculty of Medicine, Quebec, 1899, and M.D., 1901; dean and professor of surgical pathology, ethics and clinical surgery at his alma mater; past president of the College of Physicians and Surgeons of the Province of Quebec; was surgeon at the Hotel-Dieu from 1914 to 1927, when he became chief surgeon at St. Sacrament Hospital; was decorated by France and Italy; aged 63; died, June 28.

Frederick A. Speik ☉ Los Angeles; Rush Medical College, Chicago, 1907; fellow of the American College of Physicians; at one time professor of medicine at the College of Physicians and Surgeons, medical department of the University of Southern California; formerly chief of the department of medicine of the County Hospital; on the staff of the Collis P. and Howard Huntington Memorial Hospital, Pasadena; aged 58; hanged himself, June 30.

George Livingston Hays, Pittsburgh; University of Pennsylvania Department of Medicine, Philadelphia, 1895; professor of clinical surgery at the University of Pittsburgh School of Medicine; fellow of the American College of Surgeons; member of the Medical Society of the State of Pennsylvania; surgeon to the Mercy Hospital; aged 70; died, June 22.

Walter Wendell Fray ☉ Rochester, N. Y.; Harvard Medical School, Boston, 1922; assistant professor of radiology at the University of Rochester School of Medicine and Dentistry; member of the American Roentgen Ray Society and the American College of Radiology; on the staff of the Strong Memorial Hospital; aged 47; died, July 10, of leukemia.

John Harolde Turner ☉ Houston, Texas; University of Texas School of Medicine, Galveston, 1919; member of the American Urological Association; fellow of the American College of Surgeons; visiting urologist to the Baptist and Jefferson Davis hospitals; visiting urologist and assistant director of the Turner Institute; aged 45; died, June 1.

George Stuart Bower, Galesburg, Ill.; Northwestern University Medical School, Chicago, 1894; member of the Illinois State Medical Society; past president and secretary of the Knox County Medical Society; for many years county coroner; on the staff of the Galesburg Cottage Hospital; aged 71; died, July 14, of coronary thrombosis and hypertension.

Robert Woods Noble, Temple, Texas; Memphis (Tenn.) Hospital Medical College, 1887; member of the State Medical Association of Texas; formerly a member of the state board of health and for many years health officer of Temple; on the staff of the King's Daughters' Clinic and Hospital; aged 76; died, June 20, of acute coronary thrombosis.

Joseph Dayton Condit ☉ Pasadena, Calif.; Columbia University College of Physicians and Surgeons, New York, 1901; fellow of the American College of Physicians; served during the World War; on the staffs of the Huntington Memorial and St. Luke's hospitals; aged 63; died, July 5, of carcinoma of the stomach with peritoneal metastases.

George Driver Bragaw, Augusta, Ga.; Georgetown University School of Medicine, Washington, D. C., 1911; member of the American Psychiatric Association; on the staff of the Veterans Administration Facility; aged 54; died, July 1, of coronary thrombosis and arteriosclerosis following a laminectomy.

Ira N. Pickett, Odell, Neb.; Indiana Medical College, Indianapolis, 1878; member of the House of Delegates of the American Medical Association in 1905-1906; member and past president of the Nebraska State Medical Association; aged 87; died, June 18, of myocarditis and cerebral hemorrhage.

Cecil Edward Ross, Erie, Pa.; Western Reserve University School of Medicine, Cleveland, 1931; member of the Medical Society of the State of Pennsylvania; member of the board of directors of the Erie County Tuberculosis Hospital; on the staff of St. Vincent's Hospital; aged 37; died, June 26.

John Irwin Zerbe ☉ Franklin, Pa.; Medico-Chirurgical College of Philadelphia, 1907; county coroner; past president and secretary of the Venango County Medical Society; served during the World War; on the staff of the Franklin Hospital; aged 61; died, June 16, of coronary thrombosis.

James Stewart Archibald ☉ Danville, Ill.; St. Louis University School of Medicine, 1908; served during the World War; on the staff of St. Elizabeth's Hospital; formerly on the staff of the Decatur and Macon County Hospital, Decatur; aged 57; died, July 17, of coronary thrombosis.

Robert Francis Jones ☉ Medical Inspector Commander, U. S. Navy, retired, Savannah, Ga.; University of Virginia Department of Medicine, Charlottesville, 1909; entered the navy in 1911 and retired in 1937 for incapacity resulting from an incident of service; aged 54; died, July 4.

James G. Muir, Milford, Neb.; Lincoln Medical College of Cotner University, 1898; member of the Nebraska State Medical Association; served during the World War; aged 62; died, June 29, in the Veterans Administration Facility, Lincoln, of coronary arteriosclerotic heart disease.

James Stephen Maher, New Haven, Conn.; Yale University School of Medicine, New Haven, 1896; member of the Connecticut State Medical Society; past president of the city board of health; for many years on the staff of the Hospital of St. Raphael; aged 68; died, June 8.

John James Collins ☉ Brooklyn; Columbia University College of Physicians and Surgeons, New York, 1898; served during the World War; aged 68; for many years on the staff of St. Mary's Hospital, where he died, July 8, of hypertensive heart disease and chronic nephritis.

John R. Gillette, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1892; formerly member of the state legislature and member of the county and city school boards; aged 73; died, July 15, at his summer home in Yardley, Pa., of coronary thrombosis.

Robert Eugene Golden, Walla Walla, Wash.; University of Oregon Medical School, Portland, 1904; member of the Washington State Medical Association and the Pacific Coast Oto-Ophthalmological Society; veteran of the Spanish-American War; aged 64; died, June 30.

Edward Clayton Davis, Philadelphia; Temple University School of Medicine, Philadelphia, 1910; member of the Medical Society of the State of Pennsylvania; formerly assistant professor of bacteriology at his alma mater; aged 63; died, June 10, in the Northeastern Hospital.

Charles Fallis Hewins, Oakland, Calif.; Long Island College Hospital, Brooklyn, 1882; University of Pennsylvania Department of Medicine, Philadelphia, 1890; aged 83; died, June 27, in the Providence Hospital of bronchopneumonia and coronary occlusion.

John Henry Charles Willoughby, Dundas, Ont., Canada; Victoria University Medical Department, Coburg, 1884; at one time postmaster in Saskatoon and member of the board of trustees of the school board; formerly mayor of Regina; aged 78; died, May 22.

John Thomas Corr, Racine, Wis.; Rush Medical College, Chicago, 1896; member of the State Medical Society of Wisconsin; served during the World War; aged 70; died, June 5, in St. Mary's Hospital of carcinoma of the colon and cardiac decompensation.

Robert Lee Yeager ☉ Mineral Wells, Texas; University of Texas School of Medicine, Galveston, 1898; past president and secretary of the Palo Pinto County Medical Society; on the staff of the Nazareth Hospital; aged 68; died, June 19, of septicemia.

Jennie Sharp Sharp, Camden, N. J.; Woman's Medical College of Pennsylvania, Philadelphia, 1895; member of the Medical Society of New Jersey; formerly member of the board of education; aged 67; died, June 21, in Haddonfield.

Homer Sylvester, Madison, Wis.; University of Pennsylvania Department of Medicine, Philadelphia, 1895; served during the World War; on the staff of the Mendota (Wis.) State Hospital; aged 71; died, June 11, in a local hospital.

Le Grand Spaulding, Kennewick, Wash.; California Medical College, San Francisco, 1902; College of Physicians and Surgeons of San Francisco, 1906; member of the Washington State Medical Association; aged 65; died in June.

Buford B. Jones, Metter, Ga.; University of Georgia Medical Department, Augusta, 1904; member of the Medical Association of Georgia; for many years chairman of the board of education and mayor; aged 66; died, June 26.

William Turner Ray, Charlotte, N. C.; University of Maryland School of Medicine, Baltimore, 1934; member of the Medical Society of the State of North Carolina; police surgeon; aged 37; died, June 16, of heart disease.

August C. Huebner, Onaway, Mich.; Michigan College of Medicine and Surgery, Detroit, 1896; member of the Michigan State Medical Society; aged 67; died, July 1, in the Blodgett Memorial Hospital, Grand Rapids.

John T. Henderson, South Euclid, Ohio; Cleveland Homeopathic Medical College, 1900; aged 75; died, July 10, in the Huron Road Hospital, East Cleveland, of injuries received in an automobile accident.

Earl G. Grover ☉ Ashland, Ohio; University of Louisville (Ky.) School of Medicine, 1921; aged 46; died, July 2, in the Hurley Hospital, Flint, Mich., following an operation for gangrenous cholecystitis.

Russell Smith Clymer, Andrews, Ind.; Indiana University School of Medicine, Indianapolis, 1928; aged 38; died, July 15, at the Methodist Hospital, Indianapolis, of injuries received in an automobile accident.

Edward Carroll James Jr., White Plains, N. Y.; Johns Hopkins University School of Medicine, Baltimore, 1925; member of the Medical Society of the State of New York; aged 40; died, June 4.

Onie Ann Barrett, Wakeman, Ohio; University of Wooster Medical Department, Cleveland, 1893; Cleveland Medical College, 1893; aged 68; died, July 4, in the Norwalk Memorial Hospital, Norwalk.

William Frank Edmonds ☉ Seattle; State University of Iowa College of Medicine, Iowa City, 1904; aged 64; died, July 3, of injuries received in an automobile accident near Twin Falls, Idaho.

J. Roma Tremblay, Montreal, Que., Canada; School of Medicine and Surgery of Montreal, Faculty of Medicine of the University of Laval at Montreal, 1897; aged 68; was found dead, June 23.

William Asher La Ross, McDonald, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1891; past president of the Washington County Medical Society; aged 72; died, June 16.

William L. McBrien, Staunton, Ill.; St. Louis College of Physicians and Surgeons, 1898; on the staff of St. Francis Hospital, Litchfield; aged 75; died, July 10, of carcinoma of the bladder.

D. N. Twyman, Appomattox, Va.; Medical College of Virginia, Richmond, 1905; member of the Medical Society of Virginia; aged 63; died, June 25, of malignancy of the esophagus.

Samuel Warren De Long, Tingley, Iowa; Ensworth Medical College, St. Joseph, Mo., 1907; aged 76; died, June 9, in the Greater Community Hospital, Creston, of heart disease.

Frank Beaty Wilson, Winter Haven, Fla.; Vanderbilt University School of Medicine, Nashville, Tenn., 1901; served during the World War; aged 61; died, June 26, of pneumonia.

John Leonard Jennings Sr., Danville, Va.; Southern Homeopathic Medical College, Baltimore, 1900; aged 64; died, July 7, in the Memorial Hospital of coronary occlusion.

Burrell Brade Liles, Houston, Texas; University of Louisville (Ky.) Medical Department, 1910; member of the State Medical Association of Texas; aged 63; died, June 28.

Bernard D. Verret ☉ Rolla, N. D.; M.B., Laval University Faculty of Medicine, Quebec, 1898, and M.D., 1900; formerly county health officer; aged 64; died, May 26.

Charles Clinton Morris ☉ Paducah, Ky.; University of Louisville Medical Department, 1910; served during the World War; aged 60; died, June 30, of coronary thrombosis.

Simon Peter Earnest ☉ Delmont, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1890; for many years member of the board of education; aged 75; died, July 11.

Merle Barbee, Torrington, Wyo.; St. Louis College of Physicians and Surgeons, 1906; served during the World War; aged 60; died, July 10, of cirrhosis of the liver.

Robert Emmet Owen, St. Louis; Marion-Sims College of Medicine, St. Louis, 1901; served during the World War; aged 62; died, June 22, of coronary occlusion.

Edwin J. West, Easton, Pa.; Hahnemann Medical College and Hospital, Chicago, 1891; St. Louis College of Physicians and Surgeons, 1901; aged 80; died, June 16.

Wilbur Jay Sawyer, Cleveland; Cleveland-Pulte Medical College, 1913; aged 53; for many years on the staff of the Lutheran Hospital, where he died, July 14.

Jesse B. McKinney, Caruthersville, Mo.; Barnes Medical College, St. Louis, 1907; aged 56; died, June 23, in the Methodist Hospital, Memphis, Tenn., of heart disease.

Jefferson D. Campbell, Greeneville, Tenn.; University of Louisville (Ky.) Medical Department, 1890; aged 78; died, July 10, of carcinoma of the rectum.

Milton Girard Edmonds, Mobile, Ala.; Howard University College of Medicine, Washington, D. C., 1927; aged 38; was found dead, July 1, of myocarditis.

Jesse Edward Rayne, Elizabeth, N. J.; University of Louisville (Ky.) Medical Department, 1906; aged 60; died, June 28, of coronary thrombosis.

Felix Joseph Lownik ☉ Chicago; Bennett College of Eclectic Medicine and Surgery, Chicago, 1915; aged 46; died, July 11, of cerebral hemorrhage.

Forest Monroe Reid, Philadelphia; Howard University College of Medicine, Washington, D. C., 1920; aged 52; died, June 25, of coronary occlusion.

George B. Parkhill, Crosbyton, Texas; Memphis (Tenn.) Hospital Medical College, 1904; aged 62; died, June 29, of a self-inflicted bullet wound.

Norman Edwin Mighell, Pullman, Wash.; Rush Medical College, Chicago, 1884; aged 77; died, June 25, of arteriosclerosis and coronary occlusion.

Frederick Andrew Mendlein ☉ Buffalo; University of Buffalo School of Medicine, 1897; aged 69; died, July 12, in the Deaconess Hospital.

Gerald A. Sparling, Kirksville, Mo.; American Medical College, St. Louis, 1880; aged 84; died, June 23, of bronchopneumonia.

Royal Warren Bemis, Philadelphia; Jefferson Medical College of Philadelphia, 1892; aged 72; died, July 8, of coronary occlusion.

Henry L. McGee, Milton, Tenn. (licensed in Tennessee in 1903); aged 68; died, June 20.

Bureau of Investigation

STUFF FROM THE SEA

Kelp Is Seaweed—Not a Cure-All

The issuance of a Post Office fraud order against a concern variously known as Dr. Fack's Institute and Dr. Fack's Health Institute, at San Antonio, Texas, and its officers and agents, brings into the limelight the chief promoter, one Hugo R. Fack, and his activities in the field of quackery.

Hugo R. Fack first came to the attention of the American Medical Association through the May 1928 issue of a health fad magazine, "How to Live for Health and Strength." This carried Fack's "Authorized Translation from the German" of an article, "The Problem of Rejuvenation Solved," attributed to "G. Von Gogern, Traveler, Lecturer, Author." The article was largely a puff for an alleged rejuvenator from the orient (via Germany), known as "Lukutate." This nostrum for a time was played up in the United States and was dealt with under that

title in *THE JOURNAL*, Jan. 25, 1930, and again in the issue of April 23, 1932, under the subject "Dur-Inda, or Lukutate Redivivus" as the product had acquired a new name.

Next, Fack was observed advertising his booklet "The Necessity of Saving the Tonsils and Their Natural Non-Surgical Treatment." This appeared in a 1929 issue (month not given) of "McFerrin's Health Bulletin," put out by the food faddist Charles B. McFerrin, of Orlando, Fla., where Fack also held forth, operating, it was reported, an outfit first known as the "Natural Healing Institute" and later called the "Vitae Health Products Co." In the same year (1929) it was said that he moved this concern to San Antonio, Texas, and advertised the "Tonsalvator," a device for treating enlarged and diseased tonsils.

In 1933 a letter was sent out on a printed letterhead bearing the imposing title "Dr. Fack's Institute & Sanatorium—Naturopathic Clinic and Rest Home." There was also a subtitle, "Scientific Diet and

Drugless Methods." Also shown were the names "Hugo R. Fack, N.D., D.Orth. Ph.D.," "Emma D. Fack, N.D., D.Orth.," and "J. D. Armstrong, M.D." The American Medical Association's exhaustive files revealed no record of any J. D. Armstrong as a doctor of medicine licensed in Texas. When a form was addressed to this name in care of the Fack outfit, asking for Armstrong's medical credentials, it was returned unsigned, with the simple typewritten notation "deceased."

The Fack letter played up not only the "Tonsalvator" but also something called "Sepdelenopathy" and described as "a treatment for the elimination of toxic materials." An accompanying circular offered various nostrums by Fack, including "Fruitellax," for constipation, "Piscin—the Superior Substitute of Codliver Oil in Powderform," and "Vitae Herbs," an apparent cure-all "biologically blended after the ancient significant doctrine." (How often the faddists play up the mystical!) Finally there was "Dr. Fack's Femi-Sanax, an instrument of far-reaching therapeutic results in feminine sufferings."

In recent years Fack also has been putting out "Vegesan," described as "the essentially supplementary food in fine powder form, supplying to the system all of the needed organic materials and vitamins." Also it was claimed that "Vegesan is a pure

vegetable food, which grows in certain Southern Oceanic regions. The choicest leaves of plants are selected, washed, dried in a current of air outdoors (not in withering, i. e., Vitamin destroying sun rays), then ground into fine powder form which makes complete assimilation by the human system easy and highly economical in its use while revealing its relish taste." The advertising played up a string of testimonials from so-called doctors but, as their full names and addresses were not divulged, there was no means of identifying them.

After the Post Office Department had looked into Fack's activities it called on him to show cause why a fraud order should not be issued against him. He replied with a written answer denying the charges. He also failed to appear at a second hearing of the case and did not even send a representative. Soon afterward he sent the Post Office Department a second communication and requested permission to discontinue and abandon voluntarily the enterprise in question. Accordingly he was sent a form for making affidavit of his promise but instead of duly executing and filing it he sent in a series of further communications setting forth the alleged value of his Vegesan, which he had sold through the mails.

The Post Office memorandum by virtue of which the (October 1939) mails were closed to this scheme brought out that Fack claimed that he had obtained certain medical training at Heidelberg and Leipzig, Germany, and had been licensed to practice "naturopathy" in Florida in 1927. The memorandum pointed out that Fack had sold his Vegesan through the mails under the false and fraudulent representations that, regardless of any disease or affection involved, Vegesan would restore those who took it to permanent health: that it would prevent or cure goiter, anemia, rickets, obesity, pyorrhea, constipation, "auto-intoxication," catarrh, deafness, "old age," any disease of the heart or liver, insanity, insomnia, diabetes, sterility, and a few other things!

Fack was said to have obtained the material for Vegesan in wholesale quantities from a Los Angeles concern and to have repackaged it in his home. According to the Post Office Inspector in the case Fack, when first interviewed, stated that he did not know the composition. Government chemists reported that a microscopic examination showed it to be composed entirely of dry, finely ground seaweed, or kelp. It was brought out at the hearing that, contrary to Fack's representations that Vegesan was a rich and abundant source of all organic minerals and vitamins, the only substances it contained in therapeutic quantities were iodine and vitamin A, and that any other minerals and vitamins present were too inconsiderable in amount to have any medicinal value.

The government presented expert medical evidence that Vegesan would not overcome obesity, gland disturbances, slow and defective sexual development, toxemia, insanity, tooth decay and the rest of Fack's category and that these conditions require painstaking individual diagnosis with a view to finding the underlying factors responsible for the disease and the employment of personalized procedure adapted to the patient's needs. It was further shown that while Vegesan might be mildly laxative it would not "normalize" alimentation as Fack claimed but, on the contrary, would interfere with the appetite and digestion and produce undesirable intestinal symptoms and even aggravate disorders of the gastrointestinal tract such as ulcers, appendicitis and colitis, and also involve grave and perhaps fatal consequences when substituted for scientific treatment of heart, kidney, arterial and other serious diseases.

The evidence also showed that the iodine present in Vegesan, while it might be of some value in simple goiter, could not remedy goiter of the exophthalmic or adenomatous types, overcome cretinism or provide safe or proper treatment for disorders of the thyroid gland which may have caused these conditions.

Fack apparently set himself up as an authority on diet, as he sent out advice on the use of foods in connection with Vegesan. These instructions urged the purchase of his "De-Tox-San" and "Sepdelen."

Here, then, is another of the countless "patent medicines," many of them based on kelp, which the public is importuned to buy on the ground that they supply minerals and vitamins which, according to the food faddists and nostrum exploiters, are lacking in the ordinary diet. Of course they don't do anything of the kind.

— PLEASE PASS ON TO SUFFERING FRIENDS —

The
Diet Problem
Simplified

EAT ENJOYABLY YOUR WAY
TO HEALTH
by regular use of the
HEALTH BUILDING
Vegesan

THE ESSENTIAL SUPPLEMENTARY
FOOD IN FINE POWDER FORM
Supplying to the System All of the Needed
Organic Minerals and Vitamins.

Delicious Relish
Taste!
Health
Building!
Economical!

Low Cost!
Appropriate
Weight: 8 Oz.

You will love its unique and delightful flavor
the first time you taste it. Even the simplest
foods take on new interest by adding
"VEGESAN"

DR. FACK'S INSTITUTE
309 Madison St. San Antonio, Texas

A Fack advertisement.

Correspondence

EVALUATION OF THE PROSTIGMINE TEST FOR EARLY PREGNANCY

To the Editor:—Soskin, Wachtel and Hechter reported in THE JOURNAL (May 25, p. 2090) on the value of prostigmine in inducing menstruation in women who had missed their regular menstrual cycle. These authors stress the role that hyperemia may play in menstruation and attempt to correlate the parasympathetic nervous system with it. They write:

This relationship of the nervous system to uterine hyperemia might readily account for the well known influence of mental, emotional and physical strain on the menstrual history of women. It thus appeared possible that cases of delayed menstruation, now generally ascribed to temporary endocrine dysfunctions, might in fact occur despite normal hormone secretion and be due to abnormally decreased vascular responsiveness. It therefore seemed worth while to attempt to treat such cases by pharmacologic [prostigmine] rather than by endocrine means.

They showed that twenty-five women who had missed a menstrual period for from three to thirty-five days promptly menstruated after prostigmine therapy, provided, however, that they were not pregnant. They also showed by experiments on pregnant rats and on twenty-three women who had been found to be definitely in early pregnancy that this product did not interrupt gestation.

This work is a noteworthy contribution to research, but as a corollary to their investigation Soskin, Wachtel and Hechter advocate the use of prostigmine as a "therapeutic test for pregnancy." They maintain that if a woman fails to menstruate after the treatment "pregnancy may be diagnosed with the same degree of accuracy as is possible with the Friedman test." In other words, if prostigmine fails to induce menstruation in a woman who is overdue in her menses, she undoubtedly is pregnant.

The authors realized the shortcomings of such a test and qualified their statements by the following assertion:

It must be emphasized that this procedure applies only to delayed menstruation in women who have had a normal menstrual history up to the last period. It does not apply either to early or to prolonged amenorrhea due to endocrine dysfunction or to local organic changes.

It is easy enough to state that if the patient has skipped a menstrual period because of an endocrine disturbance or pelvic abnormality the test is not applicable, but is it so simple to rule out endocrine dysfunctions and pelvic abnormalities? These qualifications are the factors which make the test practically worthless. Any physician can make a diagnosis of early pregnancy and be correct in most instances if he can be sure to exclude all endocrine dysfunctions, all local organic abnormalities, nervous oppression and anxiety, if the patient is found to be in fine health and has always menstruated regularly and on time, when she misses her last menstrual period. It is the most likely diagnosis and can be made from the history alone. It is only when the physician has any doubt from the history and physical examination of the patient that he needs the use of a pregnancy test, and the pregnancy test must have few or no exceptions. That is why the Aschheim-Zondek and Friedman tests have withstood the test of time and why the prostigmine test, with its host of interfering endocrine dysfunctions, pelvic abnormalities and the like, cannot ever hope to be as accurate as the Friedman test.

It is not my purpose in these remarks to refute the work of these investigators but merely to define more clearly the disadvantages and possible sources of error in their suggested test. A test for pregnancy which is not from 98 to 99 per cent accurate need not be contemplated when such accuracy is already

in the armamentarium of the physician. Having recently made a survey of most of the so-called pregnancy tests (*Am. J. Obst. & Gynec.* **35**:354 [Feb.] 1938) and having discredited many of the tests which were at first highly praised (i. e. the female bitterling test, THE JOURNAL, April 13, 1935, p. 1318; the intra-dermal test, *M. Rec.* **145**:203 [March 3] 1937; the urinary histidine test, *Am. J. Obst. & Gynec.* **35**:354 [Feb.] 1938), and so on, I feel that the profession should be cautioned against any test which claims the accuracy of the Friedman test backed by so little basic or confirmatory evidence.

The following seven points are an evaluation of the prostigmine test for pregnancy:

1. The test is valueless (admitted by the authors) when the amenorrhea is due to endocrine dysfunction. But how can the examiner be certain that the case is not an endocrine dysfunction? Occasionally the diagnosis of an endocrine disturbance may be made from the history and physical examination, but this is not always possible. Therefore, to be certain that the amenorrhea is not of endocrine origin, the physician attempting the use of the prostigmine test must first test the patient with all the means at his disposal. To eliminate thyroid dysfunction, a basal metabolism test should be performed. To rule out pituitary disturbances an x-ray film of the sella turcica should be taken, a sugar tolerance test made and possibly the specific dynamic action studied. To exclude the pancreas, the urine sugar and blood sugar must be examined. To dismiss the ovaries, the physician may have to subject the patient to vaginal epithelial studies, quantitative hormone assays, biopsies of the uterine endometrium and the like. And if at the same time the patient shows some hirsutism one must rule out amenorrhea due to an adrenal adenoma, possibly by subjecting the patient to a perirenal gas insufflation with x-ray studies. It all seems so unnecessary when the Friedman test is so simple.

2. The test is worthless (admitted by the authors) when the amenorrhea is due to local organic changes. One may be able to diagnose pelvic tumors by means of a bimanual examination, but it is quite difficult to diagnose an atrophic uterine endometrium, a small corpus luteum cyst, endometriosis, oophoritis and the like without having to resort to special technics to ascertain whether or not the patient is a fit subject for the prostigmine test. Again, the examiner may have to resort to repeated endometrial biopsies, hormone determinations and even a pneumoperitoneum and hystrogram to exclude organic pathologic changes before using the prostigmine test. At times, exploratory laparotomy discloses pelvic abnormality when other means of diagnosis have failed.

3. The test can be of little value in the amenorrhea of the early menopause, since it also is an endocrine change. The menopause must therefore be ruled out by studying the cellular desquamations of the vagina and testing the pH of the vagina at different intervals.

4. There is no physiologic reason why prostigmine should induce menstruation in a patient afflicted with a constitutional disease. The test is therefore valueless in these conditions, and x-ray examinations, blood studies and other procedures must be undertaken to rule out systemic disease in its beginning phase before the new pregnancy test is resorted to.

5. The amenorrhea from beginning anemias and blood dyscrasias offer another stumbling block to the test. Complete blood counts must be resorted to, since moderate anemia will cause the missing of a menstrual period.

6. Amenorrhea following acute infections is usually easy to differentiate from a pregnancy, but gestation may continue along simultaneously with a grip or influenza.

7. It is chiefly in cases of transient amenorrhea from nervous causes in which prostigmine has its physiologic function by inducing the delayed period to appear. In cases of shock, fright, grief, sorrow, anxiety, financial troubles, family troubles, sea voyages, changes in climate and overstudy, delay in menstruation is a frequent occurrence in some women. Prostigmine is probably a valuable adjuvant to treatment in this type of amenorrhea but ordinarily the simple expedient of rest, sedation and removal of the cause is excellent therapy in allowing the menses to reappear.

All that the physician can really tell the patient whose menses were induced by prostigmine is that she was probably suffering from some type of nervous amenorrhea. It is impossible to tell a patient that she is pregnant, using the prostigmine technic, unless the many endocrine dysfunctions, the various possible pelvic abnormalities, the menopause, anemias and beginning constitutional disorders have been definitely and wholly excluded. The simple Friedman test, employing the use of the isolated female rabbit, is 99 per cent accurate, inexpensive and rapid and with few exceptions is rarely wrong in the diagnosis of placental implantation.

A. I. WEISMAN, M.D., New York.

Department of Obstetrics and Gynecology, Metropolitan Hospital.

DIVERTICULOSIS AND DIVERTICULITIS OF THE COLON

To the Editor:—In an article entitled "Solitary Cecal Diverticulitis" (THE JOURNAL, July 20, p. 194) Dr. August Jonas Jr. reported five cases of acute diverticulitis of the cecum, in two of which the age of the patients was under 40. He also collected nineteen cases from the literature, and in seven of these, or 36.8 per cent, the age was under 40.

Dr. Jonas stated that this was "in sharp contradistinction to the age incidence of multiple diverticulitis" . . . that in a Mayo Clinic report "only 5.2 per cent occurred under 40 years of age—a proportion with which other reports are in substantial agreement." While diverticulosis and diverticulitis of the colon are considered to occur usually after the fourth decade, it is not unlikely that diverticulosis, which must precede diverticulitis, is more frequently present in the colon before the age of 40 than has been indicated in the numerous publications on this subject.

The incidence of diverticulosis by decades has been based on postmortem and x-ray examinations. Since, according to a recent report from the Bureau of Vital Statistics, there is but a yearly mortality of 0.45 per cent under the age of 40 years, the figures obtained from postmortem studies cannot be considered as conclusive in establishing the true incidence before the age of 40. Likewise, x-ray studies of the gastrointestinal tract will not show the correct incidence of diverticulosis unless it is considered in the differential diagnosis and special efforts are made to demonstrate the diverticula. Diverticula may be seen following a barium sulfate enema, but at times they are not visible unless a double contrast enema is used. It may be necessary to administer barium by mouth in order to demonstrate them, and in addition these examinations may have to be repeated, since diverticula may not be visible until as late as the fourth or fifth day after the barium sulfate meal.

Diverticulosis of the colon may be present in young persons, and diverticulitis should be considered in the differential diagnosis irrespective of the patient's age.

CARL BEARSE, M.D., Boston.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

INDUSTRIAL GOGGLES

To the Editor:—When industrial goggles are worn, is the degree of comfort of the wearer a satisfactory criterion of protection as far as the danger from radiant energy is concerned? Is there any danger to the eyes from visible radiation when ordinary goggles sold by retail stores are used with no technical supervision.

M.D., Illinois.

ANSWER.—The comfort of the wearer is decidedly not an adequate criterion of the protection afforded by special purpose industrial goggles as far as radiant energy hazard is concerned. The effect of ultraviolet, for instance, is often not appreciated at once by the eye any more than by the skin. A few hours or a day later the real effect of the exposure becomes apparent. If, however, it is a question of continued comfort afforded the wearer over an appreciable time, then the comfort of the wearer would be a more adequate criterion except that it is known that certain long red rays of light produce cataract after prolonged exposure without any awareness of optical discomfort.

With respect to the second question, exact definitions are needed. What is meant by "danger to the eyes"? If it is meant that cataracts will be produced, or conjunctivitis or iritis or some other ocular disease, there appears to be practically no danger. Otherwise certainly the literature would be full of remarks on this subject, because millions of pairs of such glasses are being worn and have been worn in the United States for many years. The low priced goggles usually differ from the higher priced goggles particularly in one respect. They are full of optical flaws and consequently their effect on the eye is somewhat the same as the effect of looking through a rain swept windshield of an automobile not equipped with a good wiper. The rays of light are bent to produce irregular astigmatic effects and cause a distortion of images. This produces a feeling of "strain" and a considerable tiring of the eyes. It is conceivable, as certain authorities have proposed, that such strain may interfere with the proper nutrition of the lens. There is no certain knowledge that even this is productive of definite disease.

Some of the low priced goggles have wide opaque side shields. These interfere considerably with the normal protective mechanism of indirect sight, that is, side vision, and such goggles should not be worn either by automobile drivers or by pedestrians who are exposed to hazards such as crossing the streets, for obvious reasons. Probably the best of the low priced goggles on the market for most people are the polaroid.

VACCINE THERAPY FOR DERMATOPHYTOSIS

To the Editor:—What is the status of vaccine therapy for dermatophytosis? I am interested in this in connection with a patient who has responded to merthiolate medication but for whom it has not accomplished a lasting cure.

Virgil F. Neumann, M.D., Norwich, Conn.

ANSWER.—Opinions regarding the efficacy of vaccines in treating eczematoid ringworm are conflicting. A few find their use of great help, while most observers feel that vaccines for this infection are a failure. Lewis and Hopper in their Introduction to Medical Mycology (Chicago, Year Book Publishers, Inc., 1939) sum up the situation:

"In recent years the use of biologic products (trichophytin) in the treatment of fungous eruption (particularly dermatophytids) has been the subject of much investigation and subsequent discussion. Early reports (such as those of Van Dyck and others) were extremely optimistic. Sulzberger and Wise expressed their enthusiastic belief that a new and useful method of curing recalcitrant lesions had been brought forward. They reported cases in which cutaneous allergy to species of Trichophyton had been relieved by desensitization. Subsequent investigation has produced sharply divided opinions, ranging from that of Traub and Tolmach, who expressed doubt that trichophytin is of any therapeutic value, to that of Robinson and Grauer, who obtained spectacular results with autogenous vaccines. Sulzberger has lately expressed his belief in the soundness of the conception of the principle of desensitization but has admitted that the clinical response to treatment is poor. Combes and some others have held that the principle of desensitization is wrong, as a reduction in the immune forces may follow reduc-

tion in the sensitivity. From our research it seems that in most of the cases of actual fungous infection an increase in sensitivity is desirable (provided that this is linked up with the acceleration of the immune forces). Thus in the infections due to *T. purpureum* the lack of reactions at the site of the trichophytin test after forty-eight hours is too frequent to be ignored as an explanation for the chronicity of this type of fungous disease. In dermatophytid the condition should respond when the residual focus is eliminated. In the cases in which theoretically trichophytin should be of service it is unnecessary. In general, we do not at the present time advocate its use in treating either a definite fungous disease or an allergic manifestation (dermatophytid). This statement holds true for fungous infections due to any dermatophyte and in any site, including the scalp. Considering our results, we are unable to agree that the extravagant claims for one extensively advertised (South American) brand of trichophytin are justified."

TUBERCULOUS ADENITIS AND EDEMA OF LEG AND VULVA

To the Editor:—A Negro woman aged 44 has since September 1939 had a severe chill every three or four weeks. The chills come on without warning and usually last three or four hours. For the first hour they are mild and gradually become so severe that the patient is left in a state of collapse. Fever of 103-104 F. follows for several hours and then drops to the neighborhood of 100 F., where it may remain for several days. She generally stays in bed for a week after each chill because of generalized aching, pain in the lumbar area and pain and swelling of the left leg. Swelling of the vulva follows each chill and may remain until the next chill. When she gets out of bed she feels well except for weakness. No fever is apparent until the onset of the next bout. She has always been healthy. Three years ago she underwent a pelvic operation and the tubes and a number of small ovarian cysts were removed. She menstruates regularly and there seems to be no connection with the chills. Repeated complete physical examinations have revealed but little. The sclerae and mucous membranes are pale, there is a moderate widening of the palpebral fissures, the blood pressure is 98/70, a few fine rales are heard at the left lung base, there is a healed suprapubic midline incision, and there are marked edema of the vulvae, slight tenderness and swelling of the left leg and knee, three fixed and slightly tender glands in the left axilla about the size of olives (the size has varied from time to time) and moderately enlarged left inguinal glands. A complete blood count on Feb. 2, 1940, showed hemoglobin 60 per cent (this was originally 40 per cent and was improved by the injection of a liver vitamin solution), white cells 4,500, red cells 3,230,000 (originally 2,130,000), polymorphonuclears 42 per cent, small lymphocytes 47 per cent and large lymphocytes 11 per cent. No abnormal cells were seen on repeated examination. Urinalysis was negative except for 1 plus albumin on the first examination. The agglutination test was repeatedly negative. Malarial smears were negative. Sickle cell smears were negative. A flat plate of the abdomen and a chest plate were negative. A tuberculin test with the first dilution gave a strongly positive reaction, the reacting bulla being approximately 6.5 cm. in diameter (performed recently). A biopsy of the axillary glands revealed tuberculous adenitis in the tissue section. Apparently the process is of tuberculous origin. The mechanism of the chills is vague to me and I cannot find anything in the literature that is helpful. Could the edema be allergic in nature? I should like your suggestions concerning treatment. What of roentgen treatment?

M.D., Florida.

ANSWER.—This presents a difficult problem because the diagnosis of tuberculous adenitis seems insufficient to explain the disabling symptoms. The persistent edema of the vulva and the edema of the left leg following the acute attacks are not likely to be allergic in nature. While one hesitates to make a diagnosis of two pathologic processes in the same patient, there are certain features in this case that makes a double diagnosis tempting. There must be obstruction to the return flow from the lower extremity. This obstruction may be in the venous channels. A pelvic thrombophlebitis would produce such an obstruction, and the repeated chills and fever would be quite in keeping with such a pathologic condition. The question sets out no good reason for a pelvic thrombophlebitis. Has careful inquiry been made into the postoperative convalescence? Was there any suspicion of postoperative phlebitis? The possibility of tuberculous adenitis producing this picture is rather remote. One of the pyogenic organisms is usually the cause.

An obstruction in the lymph channels is a possibility. Tuberculosis might produce this kind of obstruction but again the chills and fever are difficult to explain. Filariasis might produce lymphatic obstruction and would explain the chills and fever, but filariasis is extremely rare in this country. Has the patient ever lived in a part of the world where infestation with *Filaria* is likely?

From the description one would select a pelvic thrombophlebitis as the most likely diagnosis. Roentgen treatment might be helpful but fairly good results have been obtained in recurrent thrombophlebitis with the use of sulfanilamide. It might be helpful to know whether the inguinal glands as well as the axillary glands were tuberculous. If the inguinal glands were nontuberculous it would lend more weight to the diagnosis of a pyogenic thrombophlebitis.

CHRONICALLY INFECTED TONSILS AND BLOOD SEDIMENTATION

To the Editor:—Would foci of infection raise the blood sedimentation rate in a middle-aged person with suspicious tonsils with no other apparent cause for raising the rate? Would that rise in sedimentation rate point to trouble in the tonsils?

H. J. McNally, M.D., Waterloo, Ont.

ANSWER.—By accepting the term "chronically infected tonsils" instead of "suspicious tonsils," and establishing the criteria on which this diagnosis can be made, the query may be answered with some degree of confidence.

Reimann and Havens have suggested that the diagnosis of chronically infected tonsils be made when there are present (a) "persistent redness of the tonsils and adjacent membranes and exacerbations of acute inflammation, often with pain or discomfort on swallowing, with or without regional lymph node swelling and tenderness, (b) systemic signs and symptoms such as fever, leukocytosis and rapid red blood cell sedimentation, or (c) swelling, pain or tenderness of the lymph nodes which receive tonsillar lymph. In other words, there ought to be some clinical or other evidence of actual inflammation of the tonsils before they are regarded as infected."

This excludes the reddened tonsil, small or large, seen in most adults, otherwise healthy, and wherein the change in color is due to the vicissitudes of the years, the use of tobacco, the climatic conditions, fumes, dust, and the like.

In the acute exacerbation of the chronically infected tonsil, the sedimentation rate is often increased. The other signs of infection, however, are as accurate an aid in establishing the presence of local disease.

A rise in sedimentation rate alone and in the absence of such criteria as Reimann and Havens have established should not be used to condemn the ordinary tonsils of adult life.

Stiles and Chapman have recently made cultures from the tonsils and determined by a test of their own devising the relative pathogenicity of the organisms obtained. They have found a relationship between the virulence of the bacteria and the sedimentation rate in the same patient. It will be necessary for this test to become general and for the work to be confirmed before there can be widespread use of this method to judge the presence of disease in tonsils.

DEXTROSE IN DIABETIC ACIDOSIS AND COMA

To the Editor:—There appears to be little unanimity of opinion regarding the use of dextrose in the treatment of diabetic acidosis and coma. Some authorities contend that dextrose in buffering a full amount of insulin develops a hotter fire to combat acidosis and both reduces the hyperglycemia and elevates the carbon dioxide tension of the blood. Other authorities contend that it is more than foolish to add dextrose to a patient already oversaturated with sugar.

M.D., Illinois.

ANSWER.—As the questioner indicates, the problem turns on the need for dextrose in the first few hours of treatment. Some do not favor its use during the early hours of treatment when the blood sugar is high because: 1. No proof exists that injected dextrose is better utilized than dextrose already flooding the body, provided sufficient insulin is supplied; in diabetic acidosis insulin, not dextrose, is lacking. 2. In the severer stages of diabetic coma the injection of dextrose may lead to renal block (Root, H. F., and Riseman, J. E. F.: *The Exceptional Requirement of Insulin and Salt Solution in Diabetic Coma*, *THE JOURNAL*, May 21, 1938, p. 1730). Large injections of dextrose result in oliguria, according to F. M. Allen (*Diabetic Experiments*, *Tr. A. Am. Phys.* 53:320, 1938) even in the treatment of hypoglycemia induced by insulin. 3. When dextrose is administered, the blood sugar ceases to be a reliable guide for treatment. 4. In certain large clinics in which dextrose is not used as a routine, the mortality rates compare favorably with those obtained elsewhere. 5. In teaching students and physicians it is safer to stress the use of large and adequate amounts of insulin than to divert attention to another feature relatively unimportant.

All will agree that during the later hours of recovery from coma, when the falling blood sugar indicates that sufficient insulin has been given to insure utilization of carbohydrate and cessation of ketone production, 100 Gm. or more of carbohydrate should be administered just as to any diabetic patient during days of routine treatment or the treatment of complications.

The primary difficulty in diabetic acidosis is the disturbance in carbohydrate metabolism due to insufficient insulin. Secondary effects are hyperglycemia, glycosuria, dehydration, acidosis, nitrogen loss, hemoconcentration and shock. The primary therapeutic problem is need for insulin.

Dextrose does not cure coma but insulin does.

ROOM TEMPERATURE AND HUMIDITY IN
TUBERCULOSIS

To the Editor:—A young man who developed tuberculosis of the lungs was exposed to some unfavorable conditions when he was employed. An engineer who examined the room reported that it was ventilated by force draft of warm air through a duct 20 by 12 inches. Air movement appeared slight and the room seemed uncomfortably warm and somewhat stuffy. The temperature was 79 F. and the humidity 32 per cent. According to the Guide, published by the American Society of Heating and Ventilating Engineers, chapter 3, modern standards for ventilation of work rooms require approximately 250 cubic feet of air space per person and a floor space of 25 square feet. These figures are conditional on control of temperature, humidity and air movement and for "still air conditions." At ordinary temperatures they represent minimal values for comfort. To what extent—I am exact—would the temperature 10 degrees above normal, workers being in close proximity with another and in contact with tuberculosis, with the floor contaminated by the use of spittoons, increase the danger from droplet infection and increased exposure to respiratory diseases?

M.D., Connecticut.

ANSWER.—A temperature of 79 F. with a humidity of 32 per cent would have no appreciable effect on the danger from droplet infection. In many houses and apartments where people reside the temperature is maintained higher than 79 F. during the winter months, and in the summer much higher temperature is not unusual. The most important factor in the development of tuberculosis in the lungs of the young man mentioned is the tubercle bacillus. It would be important to know whether he had been infected with this organism, as manifested by the tuberculin test, before he was employed and if so whether he actually had clinical disease at the time he was employed. An x-ray examination of the chest would have determined whether there were areas of disease large enough to cast shadows and, if so, laboratory and clinical examinations would have determined whether they were due to tuberculosis.

It is not clear from the question as to whether the person working in close proximity to the patient had contagious tuberculosis and whether the material in and about the spittoons contained tubercle bacilli. If the fellow worker actually had contagious tuberculosis it is possible that he transmitted tubercle bacilli to the patient, and if the patient had never previously been infected his first infection may have developed in this manner. However, the only good evidence would be obtained by applying the tuberculin test through the change from no reaction to a definite reaction while he was in contact with the other employee. Without such evidence it would be impossible to determine whether there is any direct relationship between the disease which the patient now has and the possible exposure to the other employee; that is, there is no evidence to show that the primary tuberculosis complex was not already laid down when the patient began work and that his present disease was not due to endogenous reinfection from the lesions of the old primary complex.

After infection occurs, at any time in life, endogenous reinfections may be responsible for all forms of tuberculous lesions with no further reinfection from exogenous sources. On the other hand, there is some evidence to show that exogenous reinfections can be responsible for new lesions in the body entirely independent of those produced by endogenous reinfections. Therefore it is possible that the patient was reinfected either by the respiratory or by the digestive route if he was working in close contact with a tuberculous employee. However, there is nothing described with reference to the temperature and humidity where he worked that would have any influence on first infection or reinfection with tubercle bacilli through any port of entry.

PREMENSTRUAL MASTOPATHIA

To the Editor:—Will you please give me the recognized therapy for premenstrual mastopatia.

L. C. Howe, M.D., Muscatine, Iowa.

ANSWER.—Premenstrual mastopatia may be considered a physiologic rather than a pathologic lesion and is brought about by some disturbance in one or more endocrine glands. The most disturbing symptom is pain, which occurs characteristically from ten to fourteen days before the menses and involves both breasts and neighboring structures. It is frequently accompanied by other symptoms such as headache, palpitation of the heart, abdominal distention and nervousness. The pain usually ceases promptly with the onset of bleeding. Premenstrual mastopatia or mastalgia frequently occurs in women who have menstrual disturbances or pelvic inflammatory disease.

Unfortunately there is no uniformly successful treatment. A proper brassiere for supporting the breasts is often helpful. At the present time glandular therapy is being used in an attempt to relieve painful breasts. Estrogens have helped some women. Likewise, progesterone administered intramuscularly in 1 or 2 rabbit unit doses every day or every second day of the second

half of the menstrual cycle has been claimed to have helped others. Recently good results have been reported with testosterone propionate. This substance is known to produce varying degrees of involution of the breasts. To obtain relief from breast pains, 25 mg. of testosterone propionate may be given six times during the last fourteen days of the menstrual cycle. This therapy is experimental.

Since nearly every type of endocrine therapy for premenstrual mastalgia is of only temporary benefit, the administration of these endocrine products will have to be continued every month. Occasionally there is a spontaneous absence of pain for one or more months. If, however, there is no response to endocrine therapy or the expense and inconvenience of the treatment are too great and the patient is near the menopause, a premature menopause may be induced by operation or radiation therapy provided the pain is really distressing. Precautions must always be observed in the use of active hormones.

NEPHRITIS OR NEPHROSIS IN SYPHILITIC PATIENT

To the Editor:—A woman, white, 17 and unmarried, came to me for treatment of an acute coryza. She complained in addition of what apparently was a "canker sore" of the mouth. Since I have been administering antisyphilitic treatment since December 1930 to her fiancé I took a Wassermann test, which was negative. In one week a rash appeared on both arms, the legs and the chest resembling secondary maculopapules. A repeated Wassermann test was returned positive. There was no fever, the urine was normal at the first visit and the blood pressure was 124/70. Some swelling of the ankles was present although not severe and not a subjective complaint. At weekly intervals she has received 0.3 Gm. of neoarsphenamine and 0.6 Gm. of the same drug. She now has developed generalized anasarca, the blood pressure is 178/100, the urine is that of acute nephritis and although a dietary regimen and daily doses of magnesium sulfate 2 drachms (8 Gm.) have been instituted, there is no improvement other than a fading of the rash. Will you please give me an opinion as to the cause of the acute nephritis and the treatment advised? Are the heavy metals or continuance of arsenic contraindicated? The blood urea nitrogen is 15 mg. The patient still has no subjective complaints.

M.D., Pennsylvania.

ANSWER.—It appears that the patient in question has developed severe renal involvement after the second dose of neoarsphenamine given for secondary syphilis. The relationship of syphilis and antisyphilitic treatment to nephritis or nephrosis has recently been discussed by J. H. Stokes (Modern Clinical Syphilology, ed. 2, Philadelphia, W. B. Saunders Company, 1934, p. 689), by J. E. Moore (The Modern Treatment of Syphilis, Springfield, Ill., C. C. Thomas, 1933, pp. 211-213) and by B. M. Baker Jr. (Bull. Johns Hopkins Hosp. 65:196 [Aug. 1933]).

It is almost certain that the renal lesion in this case was not caused by the neoarsphenamine. It may be either an acute syphilitic nephrosis or an acute glomerular nephritis unrelated to syphilis, though inadequate information is provided to differentiate between these two conditions. In the comparatively rare nephrosis of early syphilis there is usually massive albuminuria without cylindruria or with relatively few casts (which may be double refractile/lipoid casts), low plasma protein, inversion of the blood albumin/globulin ratio, edema, usually normal blood pressure rather than hypertension, and normal or only slightly disturbed evidence of renal function. A relatively small number of red cells may be present in the urine but usually much fewer in number than in acute glomerular nephritis.

It is suggested by A. R. Rich (Bull. Johns Hopkins Hosp. 50:357 [June] 1932) that acute hemorrhagic nephritis occurring during the course of secondary syphilis may possibly be explained on the basis that syphilitic lesions of the nasopharyngeal mucosa serve as ports of entry for the bacteria commonly known to cause acute hemorrhagic nephritis.

While a differential diagnosis between acute syphilitic nephrosis and nonsyphilitic acute glomerular nephritis cannot be made on the basis of the information given, nevertheless the treatment procedure is virtually identical. The patient should be placed at complete bed rest in a hospital under the usual medical regimen for the treatment of acute hemorrhagic nephritis, including limitation of fluids, diet and a search for and elimination of possible streptococcal foci of infection. Since the patient has early syphilis, antisyphilitic treatment should be continued for the sake of the renal lesion, if it is due to syphilis, for the prevention of even graver relapse in the nervous system, and for protection of the public health.

The trivalent arsphenamines or mapharsen do not produce renal damage of this nature in previously normal kidneys. Nevertheless they should not be given in maximum dosage to patients with renal involvement of this extent. They may, however, be given safely in small doses and at comparatively frequent intervals. For example, the patient may receive neoarsphenamine, beginning with a dose of 0.1 Gm., increasing for the second dose to 0.2 Gm. and for the third and succeeding

doses to 0.3 Gm. each, injections being given every second to third day. Mapharsen may be given in an initial dose of 10 mg., increasing to 20 mg. and for the third and succeeding doses to 30 mg., the injections being given daily. The shorter intervals between doses of mapharsen are permissible because the drug is rapidly excreted as compared with neoarsphenamine.

This therapeutic regimen should provide a prompt differential diagnosis between acute syphilitic nephritis and acute glomerular nephritis due to bacterial infection. If the renal lesion is syphilitic there should be prompt and spectacular improvement within a period of two to three weeks.

The administration of preparations of the heavy metals, either bismuth or mercury, should be avoided until the correct diagnosis is clear. If the lesion is syphilitic nephrosis these drugs should not be employed until all evidences of renal damage have disappeared, i. e. from two to three months hence. If, on the other hand, the lesion is acute hemorrhagic nephritis, the time at which heavy metals may be given depends largely on the patient's progress and the possibility that the acute lesion may be transformed into a subacute or chronic form of nephritis.

ABDOMINAL DISCOMFORT IN CHILD

To the Editor:—A boy aged 10 years has been bothered with his stomach for several years. The family at first noticed that he had from one to four stools daily. He complained of general abdominal discomfort, tenderness about the navel and appendix region (appendix removed) and along the left side. Stools appear normal, except for being soft. No mucus or blood was noticed. Hemoglobin has been as low as 65 per cent; the red and white counts are normal; the urine is normal; the chest is normal; there is abdominal tenderness in the cecum, the sigmoid and about the navel. X-ray examination of the stomach shows a hyperactive intestinal tract. In fact, four hours from administration, barium sulfate was all over the rectal region of the bowel. The child is of a nervous make-up. Stools have been checked and are found negative for amebic dysentery. Will you please advise me as to what other pathologic disturbance will cause hyperactive action of the bowel?

Kenneth A. Ohme, M.D., Mitchell, Neb.

ANSWER:—The symptoms of this child as revealed from the history, consisting of a nervous make-up, abdominal discomfort and normal stools, are probably on a neurogenic basis. Organic malformation of the bowel, as Meckel's diverticulum, may cause similar symptoms, though presumably at the time the appendectomy was performed the surgeon explored the intestinal tract for such an anomalous condition. Intestinal parasites, such as roundworm infestation, may cause similar symptoms. Likewise tuberculous ulcers of the intestinal tract may cause such symptoms and it would be wise to rule out tuberculosis by suitable tests. Dietary indiscretions or intolerance to certain constituents of the diet, such as fats or carbohydrates, may produce such symptoms. Finally, allergy to specific food substances may occasionally cause such symptoms.

DERMATITIS FROM HOP PLANT AND DESENSITIZATION

To the Editor:—I am interested in the treatment of contact dermatitis due to the hop plant. Because of the numerous persons in this vicinity affected during the hop season, I would appreciate some suggestions as to a treatment outline or references.

M.D., California.

ANSWER:—The dermatitis caused by the hop plant is probably due to the lipoids or resins found in the plant leaf. These substances are soluble in lipid solvents, as ether, and are the cause of the cutaneous lesions produced by plants.

The best treatment for the dermatitis is the use of protectives for exposed areas, as gum mastic, ethyl cellulose or gloves. If such means of protection are not possible or prove inadequate, hyposensitization may be attempted. Contact dermatitis due to plants is the only type for which there is some hope of relief through hyposensitization. Even here the results of present methods of treatment of the well known and relatively common clinical entities are in dispute. Varying results have been reported in the attempt at hyposensitization for poison ivy and pollen dermatitis. The method commonly used for the preparation of the antigen is ether extraction of the material. The material may then be dissolved to make a 2 per cent solution in an oil, as almond oil, for intramuscular injection. The initial dose usually used is 0.05 cc. of this 2 per cent solution, although it may be advisable, in the absence of knowledge of the potency of the antigen, to start with a lower dose by diluting the original 2 per cent solution with the oil solvent to a 1:10 or even 1:100 strength. The dose may be increased to as high as 1 cc. of the 2 per cent solution by intramuscular injection.

If facilities for the preparation of the material are not available, the plant may be sent to any of the well known pharmaceutical houses for the preparation of the antigen.

ENLARGED SUPRACLAVICULAR LYMPH NODES

To the Editor:—In February 1939 a woman aged about 62 came to me with supraclavicular and cervical glands enlarged on both sides. The right supraclavicular space was filled with these enlarged glands and the left side not quite so much enlarged. She is a widow (third time), has three boys and two girls, men and women grown, and has had no miscarriages (one son and two daughters are married and have children). She has earned a living for herself and the children for the past twenty-five years, until the children were able to take care of themselves. She has worked to care for herself since then. Her general health has been good. In the twenty-five years she has not had to see a doctor more than half dozen times and then not for anything that would put her to bed. Her blood test showed red cells 4,088,000, white cells 5,900, hemoglobin 96 per cent, nonfilaments 25 per cent, filaments 45 per cent, lymphocytes 26 per cent, monocytes 3 per cent and eosinophils 1 per cent. At the time I wanted to take out one of the glands for a biopsy but she felt that she must get back to her work. She returned today saying that the glandular enlargement went down following her visit and remained down till six weeks ago. Now it is showing more enlargement than before and on the left posterior cervical space there is a large gland about 2 by 1 1/4 inches in size like an egg split lengthwise, with smaller ones filling the supraclavicular and cervical spaces. She says that when she was with her son in Manila some five or six years ago she had a similar condition, which left her after a few weeks. She is worried now because this time the glands have persisted longer than at any other time. They are not sore or painful. She is well nourished, large chested, a strong type of woman, about 5 feet 6 or 7 inches tall (170 cm.) and weighs around 170 pounds (77 Kg.). Her Wassermann reaction is negative. Can you give me any indication as to what might cause this trouble in her? I had thought of Hodgkin's disease but when the enlargement disappeared I began to feel that my suspicions were wrong.

M.D., Minnesota.

ANSWER:—It is often extremely difficult to make a differential diagnosis of adenopathy and it seems subversive of the best interest of the patient to attempt to do so without biopsy when this procedure will promptly supply the answer. From the description one can only say that leukemia seems to be ruled out by the blood count, and syphilis seems to be excluded by the negative Wassermann reaction. Hodgkin's disease and lymphosarcoma loom large as possibilities, as do tuberculosis and other less common conditions. Biopsy should be insisted on at once and examination of the tissue by a competent pathologist will be almost certain to furnish the diagnosis. In those rare instances in which the pathologist is puzzled, clinical differentiation is clearly hopeless.

ACNE IN PRIMITIVE RACES

To the Editor:—Can you give me information concerning the incidence of acne vulgaris in Eskimos or among the primitive peoples of Africa, Australia and similar regions? Is there any correlation between the occurrence of acne vulgaris and dental caries?

M.D., Pennsylvania.

ANSWER:—Acne vulgaris among Eskimos, native black Africans, Australian aborigines and Maoris appears to be a much less common disorder than it is among civilized white people. As the Maoris adopt modern methods of living, the condition occurs more frequently. In Ellesmere Island, Somerset Island and Baffin Land one would expect to find a great deal of seborrhea and acne, because the people subsist on a highly fatty diet. They eat practically all their food in the raw state, and no sledge dog could gobble up strips of seal meat faster than a hungry young Eskimo.

Acne as encountered in private practice and in the clinics of the Middle West is practically nonexistent among native Africans. The Kikuyu apparently suffers more frequently than the members of the white tribes who live outdoors and subsist on a simple diet. While dental caries and focal infections of the teeth probably aggravate acne vulgaris, it is doubtful whether disorders of this type ever cause it, *sui generis*.

SCARS OF CORNEA

To the Editor:—Is there anything new, or old for that matter, to remove scar tissue? This is a case of supposedly too strong silver nitrate solution in the eyes of an infant, or it might have been infectious. So far as I know we shall never know. Now there is complete white membrane over the cornea. Theoretically potassium iodide should dissolve scar tissue.

C. B. Kenton, M.D., Artesian, S. D.

ANSWER:—Dense scars of the cornea cannot be dissolved or thinned by any chemical means. Innumerable methods have been reported by many authors with varying degrees of success, but interestingly enough other clinicians were not able to corroborate the results. If the opacity is superficial and thin, peeling of the superficial layers of the cornea is frequently successful in restoring partial transparency. But if the opacity is throughout the thickness of the cornea, total transplantation of corneal tissue offers the only hope. And that can be successful only if the corneal tissue adjacent to the graft is fairly transparent and viable.

SERORESISTANT SYPHILIS IN CHILD

To the Editor:—In the latter part of 1934 I discovered active syphilis in a young girl employed as a maid in the household of a close friend. As one of the children in this house had been ill for some months previously, I investigated the entire family and found that this particular child had a positive Wassermann reaction. Both parents and a younger brother were and have had negative reactions on repeated examinations. The child with the positive reaction of the blood was only 7 years of age at the time and I immediately instituted a rigorous course of intravenous arsenicals alternating with preparations of bismuth. These treatments have now been in force for six years, with little let-up. The spinal fluid gives a negative reaction; the child shows no external evidence of this condition, yet Wassermann reactions of the blood are persistent by four plus. What are the possibilities, after this extensive treatment and after this length of time, of securing a negative Wassermann reaction? What should one do in this case? Should there be a let-up in treatment or should one continue treating as in an early case? What is the outlook for this child as far as a so-called cure is concerned? M.D., New York.

ANSWER:—The situation described by the inquirer of seroresistance in a syphilitic child with apparently latent syphilis who has been treated presumably continuously for six years does not differ in the least from the management of seroresistance in the adult. This situation is discussed in detail in an article by Moore and Padgett (*The Problem of Seroresistant Syphilis: So-Called Wassermann Fastness*, *THE JOURNAL*, Jan. 3, 1938, p. 96).

PULPLESS TEETH AND MOUTH CANCER

To the Editor:—Is there any relationship between "dead" teeth in the mouth, root canal fillings and cancer of the mouth?

M.D., North Carolina.

ANSWER:—The term "dead" tooth as commonly used refers to a tooth the pulp of which has undergone degenerative changes and is no longer vital. Root canal fillings are placed in the pulp cavity, replacing the space occupied by the dental pulp. A tooth in which the roots are filled must therefore be a pulpless or, as often loosely termed, a "dead" tooth. While there may be residual infection in the degenerative pulp tissue of a pulpless tooth or in the periapical region of a pulpless tooth with or without root canal filling, there is no well substantiated evidence to suggest any relation to cancer of the mouth.

RETINITIS PIGMENTOSA

To the Editor:—Please discuss treatment in pigmentary degeneration of the retina, with particular reference to liver and vitamin A therapy, if any.

M.D., California.

ANSWER:—There have been extensive reports in the literature on this subject and as yet there is no unanimity of opinion. Consequently the necessarily abbreviated discussion that could appear in this column would be of no particular value. The reader is referred to the comprehensive article by Joseph Levine that appeared in the *Archives of Ophthalmology* (9:453 [March] 1933) and to the second edition of *Ocular Therapeutics* by S. R. Gifford (Philadelphia, Lea & Febiger, 1937, p. 324). It must be noted in passing that no one clinician nor any one clinic has the opportunity to observe a sufficiently large number of cases of retinitis pigmentosa to be able to judge adequately of the comparative value of the innumerable procedures recommended. Particular attention is called to the use of theelin (estrone) as described in the Gifford textbook. There seem to be more reports of good results from this product than from any other therapeutic procedure ever used.

RIB RESECTION IN EMPYEMA

To the Editor:—Why are acute empyemas always drained by resecting the eighth rib instead of a lower rib? Resection of the lower rib would result in more dependent drainage.

M.D., Alabama.

ANSWER:—Acute empyemas are not always drained by resecting the eighth rib. By whatever method one drains the empyema, one aims at entering at its lowest part. Sometimes this is the eighth rib, sometimes the ninth, sometimes the tenth. It is obvious that the empyema must be drained where it is in contact with the chest wall. Sometimes this is in the anterior part of the thorax. In these cases it may be necessary to resect a segment of the third rib in front. An apical empyema may have to be drained by resection of the second rib high in the axilla or of the third or fourth rib between the spine and the scapula. One never operates for empyema until pus has been aspirated and obtained. One always drains the empyema at a site where pus has been obtained. When an empyema is situated in the usual location in the lower and posterior portion of the pleural cavity, one usually aspirates just over the ninth or tenth

rib. It is usually well to start low and, if one does not get pus at that site, to go over the rib just higher.

It is important to emphasize the fact that there is no standard approach to empyema, because empyema may occur any place in the pleural cavity. Physical and x-ray examinations should localize it and should determine the site of aspiration, which in turn should determine the site of operation.

CULTURE MEDIUMS FOR BACTERIOLOGIC LABORATORY

To the Editor:—I wish to set up a bacteriologic laboratory for the performance of the less specialized cultural methods. I would appreciate your recommendation and outline of the preparation of suitable mediums for such procedures. I do not expect to be able to do the finer methods of isolation and identification but would like to be able to grow out with reasonable accuracy and certainly various exudate and blood stream pathogens.

E. C. Chamberlain, M.D., Fort Lauderdale, Fla.

ANSWER:—Unless it is desired to do extensive work in the identification of bacteria (in which case at least one person might be constantly employed in the preparation and standardization of culture mediums) the most practical procedure would be to obtain a selection of dehydrated mediums. This is added to the proper amount of water, tubed and sterilized as needed.

The Difco Laboratories, 920 Henry Street, Detroit, carry a large assortment of such mediums. On request they send their "Difco Manual," which describes each formula and its use in the growth and isolation of bacteria.

ACID SALIVA

To the Editor:—Can you suggest a method of treatment that will alkalize an acid saliva? The saliva in this particular instance is gradually destroying the teeth. Regardless of the amount of alkali the patient takes, the saliva remains acid. Complete physical examination and routine laboratory examination are negative.

M.D., California.

ANSWER:—The saliva normally is slightly acid but is never sufficiently acid to destroy the teeth when secreted. Any acid condition which would destroy the teeth is probably due to a local rapid fermentation of free sugar. A high protein diet tends to increase the acid neutralizing power of the saliva. A sugar free, high protein diet usually benefits cases of this sort as far as the teeth are concerned. If other conditions which may contraindicate this type of diet, such as inability to utilize starch or protein, are present, dental restoration is the only alternative.

INJECTION OF VAS AND VASECTOMY

To the Editor:—Is there any recognized method of sclerosing the vas deferens, for sterilization purposes, by injection of some sclerosing agent into its lumen? Is any such method in use in dealing with the feeble-minded or insane?

M.D., Illinois.

ANSWER:—No references have been found to any substance being injected into the vas deferens for purposes of sterilization. This procedure would be making a hard job out of an easy one. Sterilization, by removing a section of the vas deferens and overlapping the cut ends and ligating them, is so simple and so sure that there is no necessity for looking for other methods.

"PHYSICIAN, HEAL THYSELF!"

To the Editor:—Will you kindly tell me, if you can, the correct wording and the derivation of the expression "Physician, heal thyself"? I have heard it on numerous occasions but do not know whether or not I have heard it correctly nor do I know whence it came.

M.D., California.

ANSWER:—The phrase "Physician, heal thyself" appears in the Gospel of St. Luke, chapter 4, verse 23, which says "And he said unto them, Ye will surely say unto me this proverb, Physician, heal thyself: whatsoever we have heard done in Capernaum, do also here in thy country."

Incidentally, verse 24, which follows, says "And he said, Verily I say unto you, No prophet is accepted in his own country."

MERCURY BICHLORIDE INTRAVENOUSLY FOR SYPHILIS

To the Editor:—Please tell me if the following method is useful in the treatment of syphilis: mercury bichloride 1:1,000 intravenously, starting in doses of 1 cc. and gradually increasing the dose of 8 cc., giving injections two or three times a week. Please advise me as to the therapeutic value of this method if you have any information.

M.D., China.

ANSWER:—While this therapy was all right in a past generation, it is hardly considered up to date. It would be rather difficult to outline the treatment that should be used, in default of knowledge concerning the symptoms or stage of the disease.

Medical Examinations and Licensure

COMING EXAMINATIONS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL, August 10, page 480.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: Montgomery, June 17-19. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

ALASKA: Juneau, Sept. 3. Sec., Dr. W. W. Council, Box 561, Juneau.

ARKANSAS: Regular. Little Rock, Nov. 7-8. Sec., Dr. D. L. Owens, Harrison. *Eclectic*. Little Rock, Nov. 7. Sec., Dr. Clarence H. Young, 415 Main St., Little Rock.

CALIFORNIA: *Oral examination* (required when reciprocity application based on a state certificate or license issued ten or more years before filing application in California), San Francisco, Oct. 2. *Written examination*. Sacramento, Oct. 21-24. Sec., Dr. Charles B. Pinkham, 1020 N St., Sacramento.

COLORADO: Denver, Oct. 1-4. Applications must be on file not later than Sept. 17. Sec., Dr. Harvey W. Snyder, 831 Republic Bldg., Denver.

CONNECTICUT: *Written*. Hartford, Nov. 12-13. *Endorsement*. Hartford, Nov. 26. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden. *Homeopathic*. Derby, Nov. 12-13. Sec., Dr. Joseph H. Evans, 1488 Chapel St., New Haven.

DISTRICT OF COLUMBIA: Washington, Nov. 11-12. Sec., Commission on Licensure, Dr. George C. Ruhland, 203 District Bldg., Washington.

FLORIDA: Tampa, Nov. 18-19. Sec., Dr. W. M. Rowlett, Box 786, Tampa.

GEORGIA: Atlanta, Oct. 8-9. Joint-Sec., State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

HAWAII: Honolulu, Jan. 8-11. Sec., Dr. James A. Morgan, 48 Young Building, Honolulu.

IDaho: Boise, Oct. 1. Dir., Bureau of Occupational License, Mr. H. B. Whittlesey, 355 State Capitol Bldg., Boise.

ILLINOIS: Chicago, Oct. 1-3. Superintendent of Registration, Mr. Lucien A. File, Springfield.

INDIANA: Indianapolis, June 17-19. Sec., Board of Medical Registration and Examination, Dr. J. W. Bowers, Citizens Trust Building, Fort Wayne.

KANSAS: Topeka, Dec. 10-11. Sec., Dr. J. F. Hassig, 905 N. Seventh St., Kansas City.

KENTUCKY: Louisville, Dec. 3-5. Sec., State Board of Health, Dr. A. T. McCormack, 620 Third St., Louisville.

MAINE: Portland, Nov. 12-13. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: *Medical*. Baltimore, Dec. 10-13. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Homeopathic*. Baltimore, Dec. 10-11. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: Boston, Nov. 12-14. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 413-F State House, Boston.

MICHIGAN: Lansing, Oct. 9-11. Sec., Dr. J. Earl McIntyre, 202-4 Hollister Bldg., Lansing.

MINNESOTA: Minneapolis, Oct. 15-17. Sec., Dr. Julian F. Du Bois, 350 St. Peter St., St. Paul.

MISSISSIPPI: *Reciprocity*. Jackson, December. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MONTANA: *Reciprocity*. Helena, Sept. 30. *Written*. Helena, Oct. 1-2. Sec., Dr. S. A. Cooney, 216 Power Block, Helena.

NEW JERSEY: Trenton, Oct. 15-16. Sec., Dr. Earl S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, Oct. 7-8. Sec., Dr. Le Grand Ward, 135 Sena Plaza, Santa Fe.

NEW YORK: Albany, Buffalo, New York and Syracuse, Sept. 23-26. Chief, Bureau of Professional Examinations, Mr. Herbert J. Hamilton, 315 Education Building, Albany.

NORTH CAROLINA: *Reciprocity*. Durham, Dec. 3. Sec., Dr. W. D. James, Hamlet.

NORTH DAKOTA: Grand Forks, Jan. 7-10. Sec., Dr. G. M. Williamson, 4½ S. Third St., Grand Forks.

OKLAHOMA: Oklahoma City, Dec. 11. Sec., Dr. James D. Osborn Jr., Frederick.

PUERTO RICO: San Juan, Sept. 3. Sec., Dr. O. Costa Mandry, Box 3834, Santurce.

RHODE ISLAND: Providence, Oct. 3-4. Sec., Division of Examination, Dr. Robert M. Lord, 366 State Office Bldg., Providence.

SOUTH DAKOTA: Pierre, Jan. 21-22. Dir., Medical Licensure, Dr. J. F. D. Cook, Pierre.

VERMONT: Burlington, Feb. 11. Sec., Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, Dec. 4-6. Sec., Dr. J. W. Preston, 30½ Franklin Rd., Roanoke.

WEST VIRGINIA: Morgantown, Oct. 31-Nov. 2. Sec., Public Health Council, Dr. Arthur E. McClue, State Capitol, Charleston.

WISCONSIN: Madison, Jan. 14-17. Sec., Dr. H. W. Shutter, 425 E. Wisconsin Ave., Milwaukee.

WYOMING: Cheyenne, October. Sec., Dr. M. C. Keith, Capitol Building, Cheyenne.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ARIZONA: Tucson, Sept. 17. Sec., Dr. Robert L. Nugent, Science Hall, University of Arizona, Tucson.

COLORADO: Denver, Sept. 16-17. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver.

CONNECTICUT: New Haven, Oct. 12. Chairman, State Board of Healing Arts, Dr. Charles M. Bakewell, 1945 Yale Station, New Haven.

DISTRICT OF COLUMBIA: Washington, Oct. 21-22. Sec., Commission on Licensure, Dr. George C. Ruhland, 203 District Bldg., Washington.

FLORIDA: Gainesville, Nov. 1. Applications must be on file not later than Sept. 16. Sec., Dr. John F. Conn, John B. Stetson University, De Land.

Iowa: Des Moines, Oct. 8. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Building, Des Moines.

MINNESOTA: Minneapolis, Oct. 1-2. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis.

NEBRASKA: Lincoln, Oct. 1-2. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, 1009 State Capitol Bldg., Lincoln.

OREGON: Portland, Oct. 26. Sec., Mr. Charles D. Bryne, State Board of Higher Education, University of Oregon, Eugene.

SOUTH DAKOTA: *Examination*. Yankton, Dec. 6-7. *Endorsement*. Dec. 21. Sec., Dr. Gregg M. Evans, Yankton.

WISCONSIN: Madison, Sept. 21. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.

Alaska March Report

Dr. W. W. Council, secretary, Alaska Board of Medical Examiners, reports the written examination for medical licensure held at Juneau, March 5, 1940. The examination covered ten subjects and included 100 questions. An average of 75 per cent was required to pass. Two candidates were examined, both of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of Minnesota Medical School.....	(1935)		89
Columbia University College of Physicians and Surgeons (1934)			90

Missouri Reciprocity Report

Dr. Harry F. Parker, secretary, State Board of Health of Missouri, reports twelve physicians licensed by reciprocity and two physicians licensed by endorsement on April 18. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas School of Medicine.....	(1939)		Arkansas
Indiana University School of Medicine.....	(1923)		Indiana
University of Kansas School of Medicine.....	(1936), (1937)		Kansas
Johns Hopkins University School of Medicine.....	(1936)		Maryland
Boston University School of Medicine.....	(1915)		Kansas
University of Minnesota Medical School.....	(1937)		Minnesota
University of Nebraska College of Medicine.....	(1938)		Nebraska
Cornell University Medical College.....	(1939)		New York
University and Bellevue Hospital Medical College.....	(1929)		Iowa
University of Rochester School of Medicine and Dentistry.....	(1932)		New York
Ohio State University College of Medicine.....	(1935)		Ohio

School	LICENSED BY ENDORSEMENT	Year Endorsement Grad.	of
Washington University School of Medicine.....	(1936)	N. B. M. Ex.	
Cornell University Medical College.....	(1936)	N. B. M. Ex.	

Illinois April Report

Mr. Lucien A. File, superintendent of registration, Department of Registration and Education, reports the written examination for medical licensure (graduates of foreign schools given also a practical test) held in Chicago, April 2-4, 1940. The examination covered ten subjects and included 100 questions. An average of 75 per cent was required to pass. Fifty-eight candidates were examined, fifty-three of whom passed and five failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Chicago Medical School.....	(1940)		80
Loyola University School of Medicine.....	(1939) 80,		86*
Northwestern University Medical School.....	(1939) 85,* 87, (1940) 81, 82,* 85		83,*
Rush Medical College.....	(1937) 79,		79,
(1938) 79,* 82,* 83,* (1939) 81,* 82, 84, 86			
The School of Medicine of the Division of the Biological Sciences.....	(1939)		79
University of Illinois College of Medicine.....	(1939) 83,*	83, 84*	
University of Oregon Medical School.....	(1937)		84*
Marquette University School of Medicine.....	(1939)		82
University of Wisconsin Medical School.....	(1938)		82*
Deutsche Universität Medizinische Fakultät, Prag.....	(1903)		78
Medizinische Fakultät der Universität Wien (1899) 81,	(1917)		79,
(1920) 81, (1924) 77, 83, (1925) 79, 79, (1926) 76,			
(1928) 81, (1929) 80, (1930) 79, 80, (1931) 77,			
(1937) 75, (1938) 80			
Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin.....	(1918) 75, (1919) 77,	(1937)	80
Ludwig-Maximilians-Universität Medizinische Fakultät, München.....	(1908)		77
Schlesische-Friedrich-Wilhelms-Universität Medizinische Fakultät, Breslau.....	(1924)		77
Universität Köln Medizinische Fakultät.....	(1925) 80,	(1933)	79
Magyar Királyi Erzsébet Tudományegyetem Orvostudományi, Pecs.....	(1929)		75
Regia Università degli Studi di Bologna. Facoltà di Medicina e Chirurgia.....	(1934)		76
Regia Università di Torino Facoltà di Medicina e Chirurgia.....	(1936)		79
American University of Beirut School of Medicine.....	(1926)		82
Universität Bern Medizinische Fakultät.....	(1938)		81
Second Leningrad Medical Institute.....	(1924)		76

School	FAILED	Year Grad.	Number Failed
Chicago Medical School.....	(1937)		1
Leopold-Franzens-Universität Medizinische Fakultät, Innsbruck.....	(1921)		1

Medizinische Fakultät der Universität Wien... (1924), (1936)	2
Kaiser-Wilhelms-Universität Medizinische Fakultät, Strassburg..... (1902)	1

Twenty-six physicians were successful in the practical examination for reciprocity and endorsement applicants held in Chicago, April 2-4. The following schools were represented:

School	PASSED	Year Grad.	Reciprocity with
Northwestern Univ. Med. School... (1926)* Minnesota, (1938)			Iowa
University of Illinois College of Medicine..... (1938)			Wisconsin
Indiana University School of Medicine..... (1933),* (1938)			Indiana
State University of Iowa College of Medicine..... (1936, 2)*			Iowa
Johns Hopkins University School of Medicine..... (1936)			Maryland
University of Maryland School of Medicine and College of Physicians and Surgeons..... (1937)*			Maryland
University of Michigan Medical School..... (1934),* (1937)			Michigan
University of Minnesota Medical School..... (1928)			Minnesota
National University of Arts and Sciences Medical Department..... (1916)			Missouri
Washington University School of Medicine (1924),* (1935), (1936),* (1936, 2) Missouri			
University of Nebraska College of Medicine..... (1938)			Nebraska
Temple University School of Medicine..... (1935)*			Penna.
University of Pittsburgh School of Medicine..... (1936)			Penna.
University of Texas School of Medicine..... (1923)*			Texas
University of Wisconsin Medical School..... (1937)*			Wisconsin
School	PASSED	Year Grad.	Endorsement of
Vale University School of Medicine..... (1937) N. B. M. Ex.			
University School of Medicine..... (1938) N. B. M. Ex.			
Medical School..... (1938)* N. B. M. Ex.			

* License has not been issued.

New Mexico Endorsement Report

Dr. Le Grand Ward, secretary, New Mexico Board of Medical Examiners, reports thirteen physicians licensed to practice medicine by endorsement on April 9, 1940. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
College of Medical Evangelists..... (1939) N. B. M. Ex.			
University of Colorado School of Medicine..... (1935)			California
Chicago Medical School..... (1935)			Illinois
Keokuk Medical College, College of Physicians and Surgeons..... (1908)			Iowa
Tulane University of Louisiana School of Medicine..... (1938)			Louisiana
University of Michigan Homeopathic Medical School..... (1915)			Michigan
Creighton University School of Medicine..... (1936)			Nebraska
University of Nebraska College of Medicine..... (1935)			Wyoming
Columbia Univ. College of Physicians and Surgeons..... (1932)			New York
Long Island College of Medicine..... (1928)			Nebraska
University of Buffalo School of Medicine..... (1937)			New York
University of Tennessee College of Medicine..... (1935)			Tennessee
Université de Genève Faculté de Médecine..... (1935)			New York

Washington January Report

Mr. N. N. Vaughan, secretary, Department of Licenses, reports the written examination for medical licensure held at Seattle, Jan. 15-17, 1940. The examination covered seven subjects and included seventy questions. An average of 60 per cent was required to pass. Thirteen candidates were examined, all of whom passed. Ten physicians were licensed by reciprocity and three physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
College of Medical Evangelists..... (1939)	74		74
University of California Medical School..... (1939)			85
Rush Medical College..... (1939)			84*
Indiana University School of Medicine..... (1933) 80,			89*
University of Kansas School of Medicine..... (1939)			82*
St. Louis University School of Medicine..... (1938)			82
Creighton University School of Medicine..... (1938)			73
University of Oregon Medical School..... (1937)			82*
Marquette University School of Medicine..... (1939)			86†
Albert-Ludwigs-Universität Medizinische Fakultät, Freiburg..... (1909)			74
Regia Università degli Studi di Perugia. Facoltà di Medicina e Chirurgia..... (1935)			77

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Tulane University of Louisiana School of Medicine..... (1932)			Minnesota
Harvard Medical School..... (1928)			Minnesota
Univ. of Minnesota Medical School..... (1932), (1934), (1938)			Minnesota
St. Louis University School of Medicine..... (1938)			Missouri
Creighton University School of Medicine..... (1934)			Nebraska
(1937) South Dakota			
Cornell University Medical College..... (1932)			California
University of Tennessee College of Medicine..... (1938)			Tennessee

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
College of Medical Evangelists..... (1939) N. B. M. Ex.			
George Washington University School of Medicine..... (1938) N. B. M. Ex.			
Harvard Medical School..... (1935) N. B. M. Ex.			

* License has not been issued.

† This applicant has completed four years' medical work and will receive the M.D. degree on completion of internship. License has not been issued.

Book Notices

The Newer Nutrition in Pediatric Practice. By I. Newton Eugle, B.S., M.A., M.D., Attending Pediatrician, Broad Street Hospital and Hecksher Institute, New York. Cloth. Price, \$10. Pp. 1,155, with 183 illustrations. Philadelphia, Montreal & London: J. B. Lippincott Company, 1940.

A number of books have been written in recent years on the newer knowledge of the experimental modern science of nutrition. This is the most extensive volume devoted exclusively to this subject as applied to practical everyday pediatrics.

The first section (183 pages) is devoted to nutritional physiology and, as stated by the author, "reveals the physical and chemical basis of the growing organism in terms of the materials of life derived from food, air and water." An understanding of these processes is necessary in the scientific application of nutrition in health and disease. Substantiated scientific procedures are substituted for traditional methods. Among the many subjects discussed are energy metabolism (metabolism standards, energy requirements), protein, carbohydrate and fat metabolism, vitamin metabolism in detail (forty pages) and mineral metabolism, digestion and absorption. This section is interesting and instructive.

The second section (216 pages) deals with nutrition in health and presents established procedure for the advancement of positive health. The author states that "few children attain the degree of physical perfection and resistance to disease which innate capacities permit because of suboptimal environmental conditions . . . the goal is no longer mere freedom from disease but new levels of well-being." Such separate topics are discussed as newborn, premature, infant and child nutrition, infant formulas (types of milks and sugars), body build, feeding behavior and anthropometric measurements. In this section normal infant and child feeding and nutrition are brought down to date.

The third section (700 pages) concerns itself with nutrition in disease. Systemic disturbances primarily affected by nutritional factors have been discussed in great detail, while regional disturbances secondarily related to diet are given more cursory consideration. The author states "we prefer to formulate the principles involved in applying specific foods in diseases as is now universally practiced with other therapeutic agents." Frequently in the text this is exemplified by calculated diets for all age groups. This section is further subdivided into units on digestive, deficiency, metabolic, allergic, infectious and regional diseases.

There is an extensive bibliography following each of the various subdivisions of the book, and the index is well detailed for ready reference. Most of the illustrations are helpful. The reviewer does not agree with some of the illustrations regarding methods of administering parenteral fluids. In most pediatric hospitals subcutaneous injections of fluids are not given in the breast region in children, intraperitoneal injection of fluid has been discarded, and the longitudinal sinus is seldom used any more for blood or any other transfusions, even in an emergency.

The book is well written and easy to read but is unnecessarily long (especially the third section) largely because of two factors: repetition and detailed diet lists. Regarding repetition, for example, diet and nutrition as elaborated in the text should not require a separate division or even a separate paragraph for otitis media, the common cold, acute rhinitis, acute pharyngitis, acute tonsillitis, acute laryngitis or measles. Generally speaking, diets could be grouped and condensed under the general heading of afebrile infectious diseases and febrile ones. There is no specificity of diet for any one of these conditions nor does diet have much influence on the outcome. During an acute illness a child will take little except liquid and soft sweet carbohydrates. As he convalesces his appetite increases and, if gastrointestinal disturbance does not persist, may have his former regular diet as soon as he shows the desire for it. Why go into so much more detail? Other instances of this type could be mentioned. Regarding superfluous detailed diet lists, there are fifty-four pages of detailed ketogenic diets at different pediatric age levels. In man,

large pediatric hospitals and clinics, this type of diet at present is seldom if ever used. Other examples of too much unnecessary detail are specific individually detailed liquid and soft diets for children 2, 4, 6, 8, 10, 12 and 15 years of age, as well as complete separate diets for children of these various age groups with tuberculosis. The general principles of the type of diet for tuberculous children should be sufficient, as there certainly is no specific diet for childhood tuberculosis, as one would be led to believe from this textbook. The same type of specifically detailed diets are given for typhoid, nephrosis, nephritis, diabetes and other conditions at various ages.

The pediatrician certainly does not need these specific detailed diet lists, and the general practitioner usually has in his library volumes dealing with general dietetics containing diet lists, which could by common sense be applied to children as well if necessary.

This volume represents an overemphasis on diet in the treatment of many pediatric conditions. It emphasizes specific amounts of food and caloric requirements, whereas the sick child or even the well child will eat only what he cares to eat, calories or no calories. It might mislead the uninformed by this overemphasis to force diets on sick children to their detriment, for fear of otherwise dire results.

This would be a better and more practical volume if to the excellent first two sections on nutritional physiology and nutrition in health were added a much more condensed section on nutrition in disease, pointing out that the general idea of feeding a child with childhood tuberculosis is to give him a well rounded, high caloric diet and really admitting that, even if he eats whatever he likes within reason, he will probably recover nicely. Specific foods in pediatric diseases other than dietary deficiency diseases can be overstressed.

The Kosher Code of the Orthodox Jew: Being a Literal Translation of That Portion of the Sixteenth-Century Codification of the Babylonian Talmud Which Describes Such Deficiencies as Render Animals Unfit for Food (Hilkot Terefot, Shulhan 'Arukh); to Which is Appended a Discussion of Talmudic Anatomy in the Light of the Science of Its Day and of the Present Time. By S. I. Levin, Senior Rabbi of Minneapolis, and Edward A. Boyden, Professor of Anatomy, University of Minnesota, Minneapolis. Cloth. Price, \$4.50. Pp. 243, with 5 illustrations. Minneapolis: University of Minnesota Press, 1940.

This book constitutes the first attempt to study the Jewish law regarding fit and unfit animal food from an anatomic point of view. In order to do that, the authors made a literal translation of the sixteenth century codification of the Babylonian Talmud relating to diseases which make animals unfit for eating. After this had been done, one of the authors reviewed the anatomic portions of the law and evaluated them in the light of modern anatomic knowledge. These two diversified portions of the study brought together the strange combination of authorship, namely that of a Rabbi and of a professor of anatomy. The book, with the hundreds of notations, is intended for scholars. The average medical reader, however, will find in it enlightenment on the anatomic knowledge of the Jewish sages during the postgalenic period of medicine. Boyden believes that, as a whole, talmudic medicine is nearer that of the hippocratic than of the galenic school. As to the talmudic contribution to anatomy, Boyden states that probably the greatest single contribution of the Talmudists was the gross anatomy of the surface of the lungs, worked out in some detail by the Amoraim of the third and fourth centuries. According to him, these men and their successors were the first to record the number of lobes, to establish their fundamental asymmetry and to anticipate the modern conception of lobes as outgrowths of a stem bronchus. In addition they described the mediastinal pocket of the infracardiac lobe and the visceral pleura as well as visceral and parietal layers of the pericardium. Also they noted that adhesions arise from spittle-like exudates which congeal into membranes at the site of perforations of the lung, and distinguished them from normal membranes. Regarding the digestive system, Boyden asserts that the Talmud correctly describes the parts and action of the ruminant stomach and has provided the present day term "omasum." The rectum and anal columns were likewise named, but otherwise no distinction was made between the large and the small bowel. Probably this section contains the earliest accounts of duplication of the intestines and of the cloacal vents of birds. Of special interest is the first

description of the cauda equina by the physician Samuel (third century) and the later verification of the fact that paralysis of the legs follows severance of the spinal cord (Rabina, fifth century). The Talmud also supplies one of the earliest descriptions of young human embryos—in this case viewed under olive oil in the sunlight (Abba Saul and others, second century). In addition there are numerous first accounts of agenesis and duplication of various organs, together with such anomalies as atresia of the esophagus and of the bronchial tubes, hypospadias, and Meckel's diverticulum ilei.

The Content of Cells and Proteins in the Normal Cerebro-Spinal Fluid: The Diagnostic Importance of Demonstrating Small Pathological Changes in the Cells and Proteins; The Technique of the Investigation. By Axel V. Neel, M.D., Pathologist to the Psychiatric Laboratory, University of Copenhagen, Copenhagen. Paper. Price, \$2.75. Pp. 141. New York & London: Oxford University Press; Copenhagen: Ejnar Munksgaard, 1939.

The author has in this small monograph given a comprehensive and detailed discussion on the subject of the content of cells and proteins in normal and pathologic spinal fluids. He states, "The examination of the cerebrospinal fluid is the most important clinical laboratory examination in neurology and psychiatry. Gradually such an examination has, indeed, come to play a considerable role in the diagnosis of doubtful diseases in internal medicine and pediatry." Between the blood and the cerebrospinal fluid there is a barrier which does not allow protein or other substances of a colloidal nature to pass, while substances of a different nature (electrolytes, dextrose, uric acid, creatinine, nonprotein nitrogen) found in the blood are able to pass into the cerebrospinal fluid, where they can be demonstrated in a quotient which, for some substances (sodium chloride and magnesium) is greater than that in which they occur in the blood. The examination of the spinal fluid for sugar and for protein is important, but from the point of view of a differential diagnosis the importance is lessened. It has also been mentioned that with a decrease of the permeable substances in the blood a corresponding decrease is found in the cerebrospinal fluid. The author's purpose for this splendid monograph is to understand the normal cerebrospinal fluid as regards its content of cells and protein. He has reviewed the English and foreign literature and has offered interpretations with regard to the technic of the various tests and the differences in the normal figures that are found in the French, German and English literature. This monograph is recommended to all physicians, particularly the neurologists and psychiatrists.

Sexual Pathology: A Study of Derangements of the Sexual Instinct. By Magnus Hirschfeld, M.D. Authorized translation by Jerome Gibbs. Originally published in 3 volumes. Cloth. Price, \$2.95. Pp. 368. New York: Emerson Books, Inc., 1940.

Magnus Hirschfeld, prior to the Nazi régime in Germany, was the unquestioned leader in the diagnosis and treatment of psychologic sexual disorders. He founded the first and the greatest clinic for handling cases of fetishism, impotence, sexual crimes and domestic maladjustment. Dr. Hirschfeld allegedly examined hundreds of thousands of cases and had histories which included some of the most important personages in Germany. His writings, which were considered sound by the majority of experts in his own field, were extensive. The present volume is strangely reminiscent of Krafft-Ebing's "Psychopathia Sexualis." It deals essentially with the same subjects: perversions, strange sex conduct and interests, hypersexed individuals and cases of impotence. There is not much discussion about the cases, nor is the work tabulated in systematic form. The actual chapter structures are much like those of the earlier writers on this subject, but the chapter divisions are more modern, as they are based on the mechanism accompanying the strange behavior rather than the type of overt abnormal sex act. Hirschfeld's case histories are not as extensive or perhaps even as interesting as those of Krafft-Ebing, but the value of the book lies not in the story of the deviant but rather in Hirschfeld's experienced and detailed explanation of the mechanisms involved in the medicolegal significance of the case as it was brought out in court, when there was a court hearing, and in his numerous references to means of treating the situation. It is a less interesting book for those who are looking for sexual *curiosa* because of the fact that the approach is moderately technical, for there is a proper use of medical terminology and the style lacks

drama. Although it is not all inclusive, most of the perversions and psychosexual problems that occur in the experience of the average physician are covered here. In view of the fact that our problems in the United States do not seem to be as extensive along these lines as they are in Europe and Asia, the average physician would not have as great need for this book as perhaps does the average European psychologist, psychiatrist or private practitioner. However, any physician who has a practice presenting a number of psychosexual problems should find this book of some value. Because it was written some years ago and has just now been translated and published in this country, it is somewhat outdated.

Treatment by Manipulation. By A. G. Timbrell Fisher, M.C., M.B., Ch.B., Orthopedic Surgeon to the St. John Clinic and Institute of Physical Medicine, London. Being the third edition of "Manipulative Surgery." Cloth. Price, \$3.75. Pp. 255, with 68 illustrations. New York: Paul B. Hoeber, Inc., 1939.

A valuable book on manipulative treatment, dealing with the application of carefully controlled movements of a forced and specialized nature to joints the movements of which are restricted, with resulting painful interference with function. The history of bone setting is traced into the past through the activities of such men as John Hunter, John Hilton, H. O. Thomas, Sir James Paget and Wharton Wood. The cult of osteopathy is discussed and the conclusions of the Select Committee of the House of Lords relating to a bill for registration and regulation of osteopaths are presented. This is a crushing indictment of the cult in its claims. The development of restricted joint function is discussed from a pathologic point of view, also the prevention, diagnosis and treatment of adhesions in general, in three chapters. The indications, technic and after-treatment of lesions of the lower and upper extremity as well as those of the spine and sacro-iliac joint are dealt with at length. The book concludes with a chapter on the contraindications of manipulation. This interesting treatise on manipulation should prove to be of great interest to the orthopedic surgeon and to all others engaged in treating dysfunction of joints of traumatic or other origin.

The Rise of Embryology. By Arthur William Meyer. Cloth. Price, \$6. Pp. 367, with 97 illustrations. Stanford University, California: Stanford University Press; London: Oxford University Press, 1939.

The chief aim of the author has been to give the history of the basic ideas in embryology. He begins with the ideas on reproduction held by primitive people, who associated fertility and conception with the sun, the moon and the stars. Even at present, among some Hindus, a childless woman stands naked, after bathing, facing the sun and invokes his aid to remove her barrenness. The remote ancestors of civilized people probably held opinions about reproduction similar to those current among primitive peoples of today. The story lacks chronological continuity, because some of the records are missing. The author does not pretend to write a history but selects and restricts his material. As would be expected, the chapter on spontaneous generation ends with reference to Pasteur's experiments, which about 1861 completely explained phenomena that had baffled investigators for centuries. In the chapter on the search for the mammalian ovum the quotation from Galen suggests that Herophilus, about 280 B. C., was the first to describe the mammalian ovary. Credit is given to von Baer for discovering the mammalian ovum, but much is said about William Cruikshank, who was a neglected but deserving seeker for the ovum. Cruikshank's experiments were read before the Royal Society by Sir Everard Home, brother-in-law of John Hunter, in 1797. His observations were so accurate and his experiments so well planned that one marvels how he missed discovering the ovum, or why it was thirty years after his paper was published and forty-nine years after his experiments were performed that von Baer accidentally recognized it. Other seekers of the ovum were Prevost and Dumas, who correctly surmised that the graafian follicles had once contained the "little ovules of the horns." Chapters follow on the discovery, origin and meaning of the spermatozoa, impregnation, the problem of malformation, the growth of morphology, and on early experimental embryology. There are sixty pages of reproduced illustrations, a bibliography in the back of the book, and an index.

Compendium of Regional Diagnosis in Lesions of the Brain and Spinal Cord: A Concise Introduction to the Principles of Localization of Diseases and Injuries of the Nervous System. By Robert Bing, Professor of Neurology, University of Basel, Switzerland. Translated and edited by Webb Haymaker, Assistant Clinical Professor of Neurology and Lecturer in Neuro-Anatomy, University of California, San Francisco. Eleventh edition. Cloth. Price, \$5. Pp. 292, with 132 illustrations. St. Louis: C. V. Mosby Company, 1940.

The translation of this compendium into English will make the monograph popular because of its tremendous teaching value to the medical student. It is clearly and concisely written and its pages are full of practical points on cerebrospinal localization. The compendium has been increased from 200 to 275 pages with many new and more accurate ideas of localization which have been worked out in the past several years. There are two parts to the monograph: localization of spinal cord lesions and localization of cerebral lesions. In the first part there is a discussion of spinal cord lesions both in the transverse and in the longitudinal plane. This is an excellent departure from the usual book, which attempts to teach memorization of symptoms of disease entities instead of teaching certain fundamental signs and symptoms and then interpretation. In the second part are discussed lesions in the brain stem, cerebellum, cerebrum, basal ganglions and hypophysis. Many of the illustrations are colored.

Fisiopatología del hepato-colédoco: Colangiografía operatoria. Por Pablo L. Mirizzi, profesor titular de clínica quirúrgica de la Facultad de medicina de Córdoba. Cloth. Pp. 282, with 190 illustrations. Buenos Aires: Librería y editorial "El Ateneo," 1939.

The author has evidently made extensive use of cholangiography. Those not familiar with this subject will be enlightened to learn that it is now possible to study the biliary system by the injection of opaque oil into fistulas or at operation by injecting the gallbladder or the biliary ducts. Immediate x-ray films are highly instructive. The opening chapters deal with the anatomic and physiologic considerations, illustrated by numerous roentgenograms of the opacified hepatic and common ducts. The rest of the book is devoted to the employment of biliary tract visualization at the time of the operative act. Due credit is given to American, French and German authors who have done much to develop and popularize the method. Numerous illustrations, most of them clear and interesting, illuminate the text. The book is a veritable atlas of interesting cases. Operative cholangiography has been of great use. The accurate interpretation of the shadows is in general easy, but valuable experience with the systematic examination of hundreds of cases aids greatly in protection against errors. Among the causes of error in interpretation may be mentioned defects of surgical technic causing wounds of the biliary passages, the injection of the contrast substances outside the biliary tract, or the accidental ligation of one or more of the bile ducts. The contrast medium may be injected under low pressure and in excessive quantity. Air may be injected and cause error.

Unto the Fourth Generation: Gonorrhea and Syphilis. What the Layman Should Know. By Irving Simons, B.S., M.D. Cloth. Price, \$2.50. Pp. 243, with 18 illustrations by M. Emanuel, M.D. New York: E. P. Dutton & Co., Inc., 1940.

This book fails in its avowed purpose of being written for the layman alone and not for the physician. A large share of the material in it is of interest only to the physician. The presentation of controversial matters in the field of venereal diseases will do little but add to the confusion of the reader and may tend to increase the phobias that he may already possess, or it may well introduce new ones. There is little that the reader will benefit from statements in the book such as "On examining the patient there will be noted a large liver, saber tibia" or that "shot like lymph glands are found in the neck, groin or armpits." True these are symptoms of one of the venereal diseases, but there is no need for this detail on how to diagnose a disease. Many of the illustrations are excellent but unfortunately a few are decidedly out of place. One showing a woman with a little child and with the caption "One Child Sterility—A gonorrheal woman can usually give birth but once" is quite likely to be misunderstood. Not all cases of one-child sterility are due to gonorrhea and yet that is the impression that this illustration makes. Some of the statements the author makes are not clear and can easily confuse the reader. The final chapter, labeled "scientific addenda,"

contributes little toward the education of the nonmedical reader. To understand this chapter demands a sound understanding of bacteriology. The author speaks of reagin, amboceptor and antigen, which are not words in the common vocabulary of the layman. The book cannot be recommended for the lay reader.

Lehrbuch der röntgenologischen Differentialdiagnostik der Erkrankungen der Brustorgane. Von Dr. Med. habil. Werner Teschendorf, Chefarzt des Strahleninstituts der allgemeinen Orskrankenkasse Köln. Paper. Price, 69 marks. Pp. 803, with 891 illustrations. Leipzig: Georg Thieme, 1939.

This magnificent publication represents about the best of publications on roentgenology of the lungs. It is most comprehensive and abreast of the time. The text includes differential diagnosis of diseases of the lungs, diseases of the heart and the maladies of the esophagus and the diaphragm. One searches in vain for any serious oversight. The text is full and rather easy to read. Due attention is paid to roentgen kymography, which is explained at considerable length. Especial consideration is given to accurate identification of the actual sites of bronchial strictures in bronchogenic carcinoma. Laminagraphy comes in for extensive discussion. There are a number of illustrative roentgenograms which draw a convincing parallel between the laminagram and the ordinary roentgenogram in the diagnosis of certain lesions. In the discussion on the heart, kymography and electrocardiography are both associated with the ordinary roentgenogram in a highly instructive manner.

Skin Hazards in American Industry. Part III. By Louis Schwartz, Medical Director, U. S. Public Health Service. From the Division of Industrial Hygiene, National Institute of Health. Prepared by the direction of the Surgeon General. Federal Security Agency, U. S. Public Health Service. Public Health Bulletin No. 249. Paper. Price, 15 cents. Pp. 93, with 22 illustrations. Washington, D. C.: Supt. of Doc., Government Printing Office, 1939.

Schwartz has extended his observations of skin irritants into an additional list of industries—citrus fruit; cigar; acid; pulp and paper; organic solvents; chromic acid and chromates; iron and steel; paints, varnishes and lacquers; glass; photographing, photo-engraving, lithographing, printing, typewriting, and hectographing; and explosives. The industrial operations and materials are fully described in the text. Extensive lists of potential irritants have been prepared under certain of these headings, which in the case of glass amount to nearly a hundred different substances. Multiply examples of this kind by the total number of industrial operations, and the complexity of the problem as a factor in occupational diseases can be comprehended. There are, however, methods of protection which are discussed. Each subject has its own bibliography but the individual irritants are not separately indexed. This pamphlet again demonstrates the enormous superiority of color plates as a means of demonstrating characteristic cutaneous changes.

The Pathology of Internal Diseases. By William Boyd, M.D., LL.D., M.R.C.P., Professor of Pathology and Bacteriology in the University of Toronto, Toronto. Third edition. Cloth. Price, \$10. Pp. 874, with 357 illustrations. Philadelphia: Lea & Febiger, 1940.

This readable book has proved especially valuable to students for correlating their early courses in pathology with clinical medicine. The organization of the third edition is the same as that of previous editions, and the contents cover the pathology of most common diseases other than the more purely surgical conditions. Though much new material has been added, the book has been condensed rather than expanded. This has been accomplished by deletions as well as revisions and by relegating to small type material of subsidiary importance. The most extensively revised sections are those on the pathology of the heart and coronary arteries; diseases of the lungs, particularly lobar pneumonia, silicosis and bronchogenic carcinoma; and diseases of the kidney, revised with reference to the newer work in pathologic physiology. There are also considerable changes in the sections on some of the endocrine disorders, anemias and diseases of the spleen and lymph nodes. The classified bibliography has been supplemented and revised. A number of new illustrations have been substituted for the previous ones, and the addition of eighteen engravings and four color plates makes this an unusually well illustrated textbook.

Steckschuss und Röntgenstrahlen: Untersuchung und Behandlung der Steckschüsse. Von Prof. Dr. Rudolf Grashy. Boards. Price, 8.70 marks. Pp. 92, with 116 illustrations. Leipzig: Georg Thieme, 1940.

This book condenses into less than a hundred pages the description of nearly every useful method of foreign body localization which has been developed. The illustrations look familiar; many are duplicates of those used in the war of 1914-1918. Almost no difference can be discerned between the methods described in this work and those employed twenty-five years ago; neither do we find any new methods. Considerable attention is given to the Dessane Bonnett and similar devices for employing the x-rays fluoroscopically in the full light of the operating room. Description is also given of the method of utilizing the usual fluoroscopic equipment for aiding the surgeon in the extraction of projectiles. This is a timely publication from the point of view of the Germans and should serve to stimulate interest in this same subject in the United States.

L'anoxémie: Ses effets—son traitement. L'oxygénothérapie. Par Léon Binet, professeur de physiologie à la Faculté de Paris, Madeleine Bochet, assistante, et M. V. Strumza, assistant à la Faculté de médecine de Paris. Paper, Price, 60 cents. Pp. 95, with 26 illustrations. Paris: Masson & Cie, 1939.

Binet presents an excellent statement of the consequences of anoxemia as it affects the heart, the brain and the blood. Chapter three of part one contains an interesting presentation on the effect of drugs on resistance to anoxemia. The second half of the volume is concerned with the effect on the lungs and other organs of prolonged exposure to almost pure oxygen. It is well illustrated by photomicrographs of the pathologic changes in the viscera of guinea pigs thus exposed. Similar effects, though less advanced, were observed after a longer exposure to 70 per cent and even to 60 per cent oxygen. Oxygen therapy is well presented, especially the mechanical apparatus for the maintenance of artificial respiration. Several devices not commonly used in America are pictured, such as portable respirators which cover only part of the body. The small "spiraphore of Woillez" for the newborn should be of interest to obstetricians and practitioners in rural districts. Apparently the deficiencies of a Bourdon tube gage for therapy have not been recognized on the continent. Unfortunately there is no index and only a poor table of contents.

Savill's System of Clinical Medicine Dealing with the Diagnosis, Prognosis, and Treatment of Disease for Students and Practitioners. Edited by Agnes Savill, M.D., and E. C. Warner, M.D., F.R.C.P. Eleventh edition. Cloth. Price, \$9. Pp. 1141, with 193 illustrations. Baltimore: William Wood & Company, 1939.

As was said when the last edition appeared, any book which goes into the eleventh edition or which has to be republished nine times in twenty years must have much in it that appeals to physicians and satisfies their needs. It is the sort of textbook of medicine which the medical student likes because it is brief and the headings are prominent and easy to follow. Probably the main value of the book is for the student who wants help in gaining his first introduction to internal medicine.

Displacement of the Calcified Pineal Body in Roentgen Pictures as an Aid in Diagnosing Intracranial Tumours: An Anthropometrical-Statistical Analysis. By Bengt Lilja. Acta Radiologica, Supplementum XXXVII. Paper. Price, 10 Swedish kroner. Pp. 183, with illustrations. Stockholm: P. A. Norstedt & Söner, 1939.

This monograph proposes to determine the limits of normal variation in the position of the pineal body by the use of modern anthropological and statistical methods. By a review of the previous literature the author demonstrates the need of a more accurate method than that proposed by Vastine and Kinney and others. He used as material a series of 200 normal x-ray photographs of adult skulls from the Serafimer Hospital, all of which had been taken by the standardized technic of Lysholm. After discussing the various possibilities of error due to the technic of x-ray photography, to the method of measurement and to individual variation in the size of the skull, the author establishes the values for eleven radii with their standard deviation and mean with standard error; the directly observed measurements of the radii were calculated as percentages of the skull length and skull height for practical use. When this information obtained from normal skulls was used to interpret the measurements of the skulls of 217

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

19:639-780 (June) 1940

- *Modifying Action of Certain Drugs (Aminophylline, Nitrates, Digitalis) on Effects of Induced Anoxemia in Patients with Coronary Insufficiency: Remarks on Therapy. R. L. Levy, H. G. Bruenn and N. E. Williams, New York.—p. 639.
- *Arteriosclerosis of Coronary Arteries and Mechanism of Their Occlusion. H. Horn and L. E. Finkelstein, New York.—p. 655.
- Electrocardiogram During Attacks of Angina Pectoris: Its Characteristics and Diagnostic Significance. J. E. F. Riseman, J. V. Waller and M. G. Brown, Boston.—p. 683.
- Study of Hypothetic Anoxic Factor in Experimental and Clinical Hypertension. A. Steiner, D. M. Weeks and A. L. Barach, New York.—p. 708.
- Variations in Normal Precordial Electrocardiograms: Report of Observations on 100 Normal Subjects. R. L. Shanno, Forty Fort, Pa.—p. 713.
- Studies on Coronary Occlusion: I. Effects on Electrocardiogram of Cat of Producing Anoxemia After Coronary Artery Ligation. W. S. Scott Jr., A. Leslie and M. G. Mulinos, New York.—p. 719.
- Basal Metabolic Rate in Organic Heart Disease. H. J. Stewart and N. B. Jack, New York.—p. 738.

Action of Certain Drugs on Induced Anoxemia.—Levy and his co-workers studied the effect of various drugs on the occurrence of pain and on the form of the electrocardiograms of ten patients with coronary sclerosis. The technic used was that for inducing oxygen want by enabling the patient to breathe a mixture containing a constant percentage of oxygen at a rate comparable to normal pulmonary ventilation. The data of eighty-six tests and 739 electrocardiograms were pooled, averaged and compared with controls. 1. Aminophylline in doses of 0.48 Gm. intravenously prolonged the appearance of pain in 63 per cent and diminished the RST deviation by 58 per cent. The T waves were modified in seven of the ten patients. 2. Glyceryl trinitrate caused a prolongation of 51 per cent in the time of appearance of pain and diminished the RST deviation by 47 per cent. The T waves of six patients were modified. 3. Aminophylline prolonged the appearance of pain in 26 per cent, diminished the RST deviation by 32 per cent and modified the T waves of four patients. 4. Lactose caused only a 2 per cent prolongation in the time of appearance of pain, and the change in RST deviation was 13 per cent. The T waves of four patients were modified. 5. Erythrol tetranitrate prolonged the appearance of pain of 2 per cent, diminished the RST deviation by 26 per cent and modified the T waves of four patients. 6. Digitalis shortened the time of appearance of pain by 9 per cent, diminished the RST deviation by 40 per cent and modified the T waves of seven patients. There were no constant relationships between changes in heart rate, blood pressure, the occurrence of anginal pain and changes in the form of the electrocardiogram. It appears that when aminophylline is taken orally it exerts a beneficial action in certain cases of cardiac pain by causing dilatation of the coronary vessels. The result probably depends on the anatomic condition and physiologic state of the coronary circulation. Criteria for the selection of suitable cases are not yet at hand. Glyceryl trinitrate dilates the coronary arteries of patients with coronary sclerosis and for this reason is effective in relieving anginal pain and not because it lowers systemic blood pressure. Erythrol tetranitrate is not effective in raising materially the threshold for cardiac pain. The increase in the tendency to pain of digitalis does not appear to be due to coronary constriction.

Arteriosclerosis of Coronary Arteries and Their Occlusion.—Horn and Finkelstein studied 100 hearts which at necropsy showed evidence of recent occlusion of the coronary arteries either by thrombosis or by massive hemorrhage into

their walls or both. The main branches of the coronary arterial tree exhibited advanced sclerotic changes with approximately equal frequency, although the incidence in the anterior descending branch of the left coronary artery was perhaps slightly higher than elsewhere. Arteriosclerotic changes were infrequent in the intermuscular branches of the coronary arteries. Vascularization of the intima was found only in the presence of arteriosclerosis. Intramural hemorrhage was frequent and was always associated with vascularization and plaque degeneration. It invariably originated within the wall rather than by imbibition from the lumen. Coronary artery occlusion was produced by intramural hemorrhage in 62.5 per cent and by the formation of a thrombus on an arteriosclerotic plaque in 37.5 per cent. Intramural hemorrhage led to coronary artery occlusion by inducing acute degenerative and reactive responses in the plaque overlying the hemorrhage, by obstructing the artery mechanically or by dissolution and rupture of the intimal layer. The change is dependent on the vascularity of the plaque and the degree of its degeneration. Occlusion of a coronary artery produced by the deposition of a thrombus on a plaque was usually secondary to an edematous, acute, reactive or degenerative change in the subendothelial tissue. The coexistence of recent and organizing changes within a plaque or its thrombus supports the belief that coronary artery occlusion may be a slow, progressive process. The right coronary artery was the most frequent site of acute occlusion. Simultaneous multiple occlusions were common. Fibrinoid-like masses within arteriosclerotic plaques were considered to be the sequelae of intramural hemorrhages or extravasated blood plasma originating from the mural capillaries within the plaque. Calcification was frequent within degenerating plaques. The only correct pathogenic evaluation of old arterial lesions is a statement of the extent and degree of arteriosclerotic change. A prominent adventitial perivascular infiltration with lymphocytes was often encountered in arteriosclerotic vessels. Medial atrophy was frequent and appeared in direct proportion to intimal thickening. Arteriosclerosis was observed in every instance in which a partial or complete arterial occlusion was found. From the morphologic analysis, coronary artery occlusion is an incident in arteriosclerosis.

American Journal of Public Health, New York

30:589-724 (June) 1940. Partial Index

- Some Obscure Factors in Epidemiology of Malaria. L. W. Hackett, Cairo, Egypt.—p. 589.
- Measures Instituted for Control of Aedes Aegypti. J. H. LeVan, Brownsville, Texas.—p. 595.
- *Epidemiology of Acute Coccidioidomycosis with Erythema Nodosum. ("San Joaquin" or "Valley Fever"). C. E. Smith, San Francisco.—p. 600.
- Public Health Engineering Phases of Murine Typhus Control. R. J. Boston, Atlanta, Ga.—p. 619.
- Utilizing Vital Statistics in the Public Health Program. F. P. Allen, Cincinnati.—p. 627.
- Typhoid Fever Epidemic Caused by Carrier "Bootlegging" Oysters. H. N. Old and S. L. Gill, Hahnville, La.—p. 633.
- Administrative Problems in Securing Proper Bactericidal Treatment of Eating and Drinking Utensils. R. D. Bushong and A. H. Fletcher, Memphis, Tenn.—p. 652.
- Treatment as a Part of Services of Health Departments. G. C. Ruhland, Washington, D. C.—p. 661.
- Controlling a Malaria Epidemic at Maxine, Ala. G. M. Tate, Birmingham, Ala.—p. 675.
- "Ropiness" in Tea Caused by Aerobacter Aerogenes in Water Supply. R. A. Greene, Emma Judd and G. W. Marx, Tucson, Ariz.—p. 680.
- Laboratory Aspects of Chancroid, Granuloma Inguinale and Lymphogranuloma Venereum. E. S. Sanderson, Augusta, Ga.—p. 683.
- South Carolina Birth Registration Campaign. M. B. Woodward, Columbia, S. C.—p. 687.

Acute Coccidioidomycosis with Erythema Nodosum.—According to Smith, an investigation was made of 432 patients with San Joaquin fever, valley fever or desert rheumatism, in Kern and Tulare counties, Calif., during the seventeen months beginning December 1937. All the patients recovered without sequelae. This disease, characterized by influenza-like prodromes followed by erythema nodosum with or without erythema multiforme, was frequently confused with influenza, pneumonia, tuberculosis, measles and smallpox, and occasionally even with poliomyelitis, typhoid and syphilis. The incubation period ranged between one and three weeks. Sensitivity to coccidioidin, a product of the causative fungus, *Coccidioides immitis*, was established in from two to seventeen days after the onset of

symptoms. The erythema nodosum was associated with the hypersensitivity of freshly acquired allergy. This allergy, apparently like tuberculin sensitivity, was of long duration. Consequently, second attacks were rare (two in the series). Coccidioidomycosis with erythema nodosum was rarely if ever a contact infection. Apparently the disease was acquired by inhalation of the chlamydozoospores. The seasonal incidence corresponded to the climate and the agricultural activities, with the peak in the dusty fall and the ebb in the wet winter. The benign valley fever was most common among white females in contrast with coccidioidal granuloma, which is known to be especially prevalent among dark-skinned males. Nearly half of the patients had resided in the San Joaquin Valley less than one year, while only one ninth had been in the region ten years or more. Eventually most of the inhabitants of the region undergo an infection with Coccidioides. As erythema nodosum does not develop in more than 5 per cent of those infected, the series represented between 8,000 and 10,000 attacks of coccidioidomycosis.

American Review of Tuberculosis, New York

42:1-154 (July) 1940

- Tuberculosis Mortality and Industrialization, with Special Reference to the United States: Part I. G. Wolff, Baltimore.—p. 1.
Experimental Pulmonary Tuberculosis in Dog: Primary Infections. M. A. Mills, E. E. Barth and F. D. Gunn, Chicago.—p. 28.
Experimental Tuberculosis: Observations on Tissue Reaction and Natural Resistance. W. Pagel, Cambridge, England, and London, England.—p. 58.
Elimination of Virulent Tubercle Bacilli by Normal Kidney of Guinea Pig. D. Yegian, Ray Brook, N. Y.—p. 70.
Axillary Approach for Extrapleural Pneumonolysis and Pneumothorax. M. Joannides, Chicago, and O. C. Schlack, Oak Forest, Ill.—p. 76.
Contralateral Lung After Thoracoplasty. M. Finkelstein and A. Guggenheim, Denver.—p. 82.
New Measures in Tuberculosis Campaign in Sweden. E. Hedvall, Lund, Sweden.—p. 99.
Tuberculosis in Negroes of College Age. H. M. Payne, Washington, D. C.—p. 109.
Tuberculin Survey of 1,000 Cases of Active Tuberculosis. F. A. Musacchio, Detroit.—p. 120.

Annals of Otol., Rhin. and Laryngology, St. Louis

49:289-576 (June) 1940. Partial Index

- *Mycotic Infection of Bronchopulmonary Tract. A. J. Vadalà, Ancon, Canal Zone.—p. 291.
Usable Hearing. C. C. Bunch, St. Louis.—p. 359.
Estimation of Improvement in Hearing Following Therapy of Deafness. W. Hughson and E. G. Witting, Abington, Pa.—p. 368.
Summary of Round Window Graft Operations Performed for Deafness. W. Hughson, Abington, Pa.—p. 384.
Chronic Stenosis of Larynx, with Special Consideration of Skin Grafting. F. A. Figi, Rochester, Minn.—p. 394.
Advantage of Mixed Bone and Cartilage Grafts in Correction of Saddle Nose and Other Depressed Deformities of Dorsum. L. Cohen, Baltimore.—p. 410.
Carcinoma of Larynx. L. B. Bernheimer, Chicago.—p. 418.
Results in Labyrinth Fistulization Operation for Chronic Progressive Deafness: Report of Cases. E. H. Campbell, Philadelphia.—p. 447.
Diagnosis and Treatment of Chronic Disease of Paranasal Sinuses. H. L. Williams and L. H. Mousel, Rochester, Minn.—p. 466.
Retropharyngeal Abscess, with Reference to Abnormally Large Percentage of Adult Cases. J. E. Smith, Charleston, S. C.—p. 490.
Bacteriologic Studies of Acute Infections of Middle Ear. L. D. Henry and H. A. Kuhn, Hammond, Ind.—p. 519.
*Bronchoscopy as Treatment of Postoperative Atelectasis: Report of Ninety Cases. J. A. Perrone, Pittsburgh.—p. 528.

Bronchopulmonary Mycosis.—According to Vadalà the most important locations affected by mycotic infections are the tissues of the respiratory tract, and mycotic infection of the lungs is more prevalent than is generally suspected. It should always be considered in patients with pulmonary symptoms resembling tuberculosis whose sputums are consistently negative for tubercle bacilli. The diagnosis of primary bronchopulmonary mycosis is often not made until postmortem and microscopic examinations of the tissues reveal the true nature of the infection, the presence of fungi in the sputum during life having been considered as insignificant contaminants. The fungi that invade the bronchopulmonary system are yeastlike organisms (cryptococci, oidia, monilia, saccharomyces and endomyces) and filamentous forms, such as the actinomyces group. The repeated finding of a fungus in sputum from a patient suffering from mild or severe pulmonary inflammation is strong presumptive evidence of a fungous infection. While this of itself is not sufficient to make a diagnosis of primary infection, the absence of any other definite etiologic evidence supports such a diagnosis. A

mycotic infection may run a mild course in which the patient's general condition remains good with little fever and a few chest symptoms resembling a chronic bronchitis. These cases frequently clear up without complications. But there is another more serious type which runs a malignant course. The patient loses weight and has a cough with hemoptysis. The sputum frequently has a nauseating foul odor which is of diagnostic aid. The physical signs and character of the disease resemble those of tuberculosis. Examination of the chest may show rales and patches of dullness. Roentgenograms cannot differentiate between the two diseases because the changes are similar. The diagnosis depends on aspirating affected exudate and developing cultures on specially prepared mediums. The characteristic observation in most of these infections is the disproportion between the symptoms and the amount of pathologic change. The cough is usually only moderately severe, without a large amount of expectoration; there is a possible fever, and the leukocyte count is seldom more than 10,000. A history of a previous influenza or pneumonia is often elicited suggesting the importance of lowered tissue resistance in its production. According to Vadalà, during the last five years 350 cases have been referred to him for diagnostic bronchoscopy, which have comprised cases of bronchitis, silicosis, pulmonary tuberculosis and asthma. At the time of the endoscopic examination, routine cultures were taken from each of the large bronchi and examined for fungi. A survey since 1919 shows that numerous clinical diagnoses of bronchiectasis and pulmonary tuberculosis have been made without the presence of tubercle bacilli in the sputum. In a certain number of these, postmortem examination revealed pulmonary mycosis. Roentgenograms of mycotic or pulmonary tuberculosis suspects with no tubercle bacilli in the sputum are available in all these cases. The clinical histories of eleven cases, illustrating the characteristic changes present in such cases, are reported. The difference in the pathologic picture presented by the various mycoses (actinomycetes, moniliasis, bronchomoniliasis, coccidioidomycosis, sporotrichosis, blastomycosis and aspergillosis) in their invasion of the bronchopulmonary system are made evident by a detailed discussion of the several principal types of this group of infections. Treatment of mycotic infections depends on isolation of the organism. The iodides offer the most hopeful method of cure, making differentiation from tuberculosis imperative, as iodides in tuberculosis are detrimental.

Bronchoscopy for Postoperative Atelectasis.—Perrone states that bronchoscopic treatment of postoperative atelectasis is by no means a strenuous procedure, as the actual operating time is only two or three minutes. He reports the ninety cases encountered in six years at the Mercy Hospital, Pittsburgh. Sixty-five of the patients were male and twenty-five female. Nine patients were between 7 and 15 years of age, fifteen between 15 and 30, forty between 30 and 50, and twenty-six between 50 and 85. Sixty-five cases followed operations on the upper part of the abdomen (cholecystectomy, gastrojejunostomy or appendicitis). Although gas and ether or other alone were the most common anesthetics, atelectasis followed any type of anesthesia, even spinal and local. Seventy-four of the cases occurred between thirty-six and forty-eight hours following operation. Three cases occurred less than twelve hours after operation. Thirty-five cases occurred in the right lower lobe, twenty-three in the right lower and middle lobes, seventeen massive atelectases in the right and eight in the left lung and seven in the left lower lobe. The earliest manifestation of pulmonary atelectasis is the elevation of temperature, and then dyspnea, cyanosis, rapid pulse and chest pain. The relative mildness of the respiratory symptoms in some cases is explained on the basis of a gradually developing atelectasis and a gradual alteration in the intrapleural pressure and the vital capacity. The early diagnosis is at times dependent more on the physical examination than on x-ray observation. This is especially true in cases with minor degrees of atelectasis and in those in which the involved area lies within the cardiac shadow on the left side. The heart was definitely shifted in fifty-three, questionably in twenty-five and in twelve cases no displacement could be demonstrated. Bronchial obstruction is the most important factor in producing atelectasis. Its removal is most satisfactorily achieved by bronchoscopic aspiration. Once the obstruction is

removed, the lung reinflates. During the operative procedure, secretions that have collected in the pharynx, nasopharynx and trachea should be removed by suction. If an inhalation anesthesia is employed, a light narcosis should be used whenever possible to preserve the cough reflex. Carbon dioxide for inducing hyperventilation for deaneesthetizing is of aid, but it does not prevent atelectasis. Atelectasis occurred with almost equal frequency among both the long and the short operative procedures. The postoperative position for least impediment of respiratory movements and for a greater vital capacity is the Fowler position with, whenever possible, frequent changing. Treatment should be instituted as soon as the diagnosis of atelectasis is made. A plan which the author found satisfactory is to stop all sedatives, encourage the patient to cough, move him from side to side and give carbon dioxide inhalations. If any improvement is to take place with this procedure it does so within eight to ten hours. If no drop in pulse and temperature or improvement of physical signs occurs a bronchoscopic aspiration is performed to remove the mucous plug. The aspiration is done in bed. In fifty-eight cases, after bronchoscopic aspiration, a drop in temperature, pulse and respiratory rates occurred in twelve hours, in twenty-two in twenty-four hours and in three in thirty-six hours. The patient almost immediately feels relieved of dyspnea and is able to cough up with ease any secretion which has not been aspirated. All the sputums showed pneumococci of some type. The largest number were type IV. All but seven patients made uneventful recoveries following bronchoscopy. One died of peritonitis and at necropsy the lung was found to be normal. The remaining six died of pneumonia.

Annals of Surgery, Philadelphia

111:925-1094 (June) 1940

- Surgical Treatment of Brain Abscess by Exposure and Enucleation. R. A. Groff and F. C. Grant, Philadelphia.—p. 925.
- *Treatment of Addison's Disease by Implantation of Synthetic Hormone. W. M. Firor, Baltimore.—p. 942.
- Cysts, Sinuses and Fistulas of Thyroglossal Duct: Results in 293 Surgical Cases. J. deJ. Pemberton and L. K. Stalker, Rochester, Minn.—p. 950.
- Results of Faciohypoglossal Anastomosis in Treatment of Facial Paralysis. C. C. Coleman, Richmond, Va.—p. 958.
- *Frequency and Diagnosis of Hiatal Hernia. D. Guthrie and F. H. Jones, Sayre, Pa.—p. 971.
- Umbilical and Midline Ventral Hernias. H. Mahorner, New Orleans.—p. 979.
- *Hemolytic Jaundice. A. G. Brenizer, Charlotte, N. C.—p. 998.
- Further Experiences in Construction of Vagina: Report of Twelve Cases. L. R. Wharton, Baltimore.—p. 1010.
- Congenital Arteriovenous Angioma of Arm: Metastases Eleven Years After Amputation. R. Matas, New Orleans.—p. 1021.
- Large False Aneurysm of Right Subclavian Artery Successfully Treated by Modification of Matas Operation: Case. W. D. Gatch, Indianapolis.—p. 1046.
- Hysterical Edema of Hand and Forearm. C. Williams, Richmond, Va.—p. 1056.
- Caisson Disease, with Special Reference to Bones and Joints: Report of Two Cases. B. L. Coley and M. Moore Jr., New York.—p. 1065.

Implantation of Synthetic Hormone for Addison's Disease.—The synthesis of desoxycorticosterone acetate is the first instance in history in which a hormone has been synthesized before being isolated from its natural source. Firor determined the daily requirements of the hormone in sesame oil for seventeen patients with Addison's disease before implanting pellets of the hormone. He found that 0.5 mg. of the hormone in oil, given by daily injections, corresponds to a tablet weighing 125 mg. As many as twelve pellets were inserted through a single incision. The incisions are carried well into the subcutaneous fat. The pellets placed in the seventeen patients have met their requirements for cortical hormone for periods ranging from four to nine months. Several of the patients have had their second implantation, and in one of these it seems that there has been partial regeneration of cortical tissue. All but two of the group have returned to full activity and are working as strenuously as they did previous to their illness. Every patient has gained weight. The improvement in both diastolic and systolic blood pressure has been uniform. None of the patients have shown any suggestion of hypertension. All the patients had maintained a positive sodium and chloride balance. They have kept normal concentrations of potassium, sodium and chloride ions in the blood plasma. Similarly, the hematocrit and plasma volume determinations returned to normal after

treatment was begun and have remained so. Some of the patients have shown a decrease in the pigmentation of their skin, but none have lost all the pigmentation. No patient has shown any untoward effect from the treatment. The author warns that, since the rate of absorption depends on the consistency and surface area of the pellets, improperly prepared pellets might crumble and cause a too rapid absorption of this potent hormone. Patients suffering from Addison's disease should be under careful supervision for at least two weeks after the implantation of the pellets. At present the government has not authorized the sale of desoxycorticosterone acetate nor has it been accepted by the Council on Pharmacy and Chemistry of the American Medical Association.

Frequency and Diagnosis of Hiatal Hernia.—Guthrie and Jones state that the incidence of hiatal hernia is higher than one would expect. Many more cases are being recognized each year than previously. If the condition is kept in mind when examining the patient with atypical gallbladder or stomach complaints, a larger number will be discovered. Low substernal distress, inconstant and mild in character, especially after large meals, is an important symptom. The roentgenologist should always examine the esophagus and the stomach with the patient in the recumbent and upright positions. It is well to know that the condition exists so that in the event of an increase in symptoms the patient will not undergo a needless operation for a suspected abdominal lesion or be placed on a cardiac regimen. Not all of the lesions are surgical conditions and conservatism can be adhered to in many cases. At the Guthrie Clinic there were five cases of hiatal hernia from June 1927 to January 1938 in which operation was performed. Since then and up to November 1939 fourteen cases have been encountered. Ten of the fourteen patients have been females. Nine were treated by conservative means. One was treated conservatively plus a dilation of the esophagus. For another a phrenectomy was the only operative procedure. On three, phrenectomy was performed and the enlarged hiatal opening was repaired.

Hemolytic Jaundice.—Brenizer reports four cases of the congenital (familial) and two of the so-called acquired type of jaundice. The six cases illustrate most of the observations on hemolytic jaundice. The two acquired cases would seem sporadic and individual as far as a thorough inquiry into the two family histories shows. The author believes that the acquired type is much more severe than the congenital or familial type. Hemolytic jaundice is an entity and should be easily recognized by a syndrome consisting of acholuric jaundice, enlarged spleen, anemia, crises with pain and fever, increased fragility of the erythrocytes, increase of reticular cells, urobilin but no bilirubin in the urine, normal colored stools, increased icterus index, negative direct van den Bergh with positive indirect van den Bergh reaction and absence of itching. The congenital or familial type may embrace all cases. Hemolytic syndromes are probably due to hemolysins, possibly of different types and present in different amounts, functioning slowly in some cases and violently in others. The hemolytic anemias are in all probability due to the effects of the varying activity of hemolysins. Splenectomy offers its greatest triumph in treatment. There are few operations as dramatic. A gain of a million erythrocytes may be obtained during its performance. The autotransfusion and deluge of erythrocytes into the blood stream are life saving. Further study of the reticulo-endothelial system, bone marrow and liver might aid in establishing a more definite pathologic groundwork for hemolytic jaundice, especially since the organ removed shows but little histopathologic change. The fact that it shows little change beyond the engorgement with remnants of erythrocytes and their pigment is one of the most characteristic points of hemolytic jaundice. The liver and kidney are often as much pigmented, and the considerably enlarged liver before splenectomy is of normal size four months after operation. Gallstones and evidence of cholecystitis figure high in cases of hemolytic jaundice. Since the removed spleen has little to show for itself pathologically, but its removal usually brings about a cure, what stops the destruction and fragility of the erythrocytes? While congenital and acquired hemolytic jaundice are chronic, one of their characteristics is the attacks or crises of erythrocyte destruction.

Archives of Ophthalmology, Chicago

24:1-220 (July) 1940

- Some Fundamental Physiologic Principles in Study of Visual Field. H. L. Bair, Rochester, Minn.—p. 10.
- Atopic Cataracts. W. P. Beetham, Boston.—p. 21.
- Effect of Local Typhoid H Antibody Concentration on Production of Corneal Ulcers in Rabbits. A. L. Brown, Cincinnati.—p. 38.
- *Retrolbulbar Neuritis: Observations on 100 Cases. F. D. Carroll, New York.—p. 44.
- Isolated Congenital Absence of Inferior Rectus Muscle: Report of Two Cases in Which Operation Was Performed. V. G. Casten, Boston.—p. 55.
- Intra Diem Tension Studies in Chronic Simple Glaucoma. P. A. Chandler, Boston.—p. 62.
- Waltzing Guinea Pigs, with Particular Reference to Ocular Movements, and Righting Reflexes. D. G. Cogan, Cambridge, Mass.—p. 78.
- Tumor of Lacrimal Caruncle: Study of 200 Collected Cases. W. H. Evans, Youngstown, Ohio.—p. 83.
- Perspectives in Glaucoma Research. J. S. Friedenwald, Baltimore.—p. 107.
- Use of Fluorescein Intravenously as Aid to Ophthalmic Diagnosis and Treatment. H. Gifford, Omaha.—p. 122.
- *Convalescent Blood for Treatment of Herpes Zoster Ophthalmicus: Second Report. T. Gundersen, Boston.—p. 132.
- Antagonism Between Adrenergic Drugs and Atropine in Isolated Iris Dilator. P. Heath and E. Sachs, Detroit.—p. 142.
- Sympathetic Ophthalmia: Clinical Review of Sixty-Three Cases. R. Irvine, Los Angeles.—p. 149.
- Determination and Significance of Photopic Retinal Visibility Curve. E. Ludvigh, Boston.—p. 168.
- Recent Advances in Care of Insensitive Cornea. A. E. MacDonald, Toronto.—p. 182.
- Relation of Drusen of Optic Nerve to Tuberos Sclerosis. A. B. Reese, New York.—p. 187.
- Malignant Melanoma—So-Called Sarcoma—of Uvea: III. Extension into Optic Nerve. T. L. Terry, Boston.—p. 206.
- Corneal Involvement in Congenital Ichthyosis (Keratoderma). D. Vail, Cincinnati.—p. 215.

Retrolbulbar Neuritis.—Carroll reviews the data in 100 cases of retrolbulbar neuritis observed during four years and examined by him. During the same period he encountered sixty-five patients with "toxic" amblyopia associated with deficient diets or with excessive use of tobacco or alcohol. Also excluded from discussion is toxic amblyopia produced by known toxic agents: lead, arsenic and thallium. Complete neurologic, x-ray, allergic and medical examinations were carried out so that an etiologic diagnosis could be established. The average age of the patients when first examined because of blurred vision was 32.7 years; the extremes were 7 and 70. The causative factors in the 100 cases seemed to be multiple sclerosis in thirty-seven, Leber's disease in nine, encephalomyelitis in eight, arachnoiditis in three, vascular disease in three, sinusitis in two, syphilis in two, postspinal anesthesia in one and neuromyelitis optica in one. The cause of the retrolbulbar neuritis was not determined in thirty-four cases. If the etiologic agent is known, treatment should be directed toward its elimination. When it is unknown, treatment is of questionable value. Hospitalization during the acute attack is probably advisable. Tumor of the brain and tobacco-alcohol amblyopia are to be differentiated from retrolbulbar neuritis. Most patients noticed sudden decrease of vision in one eye. Sometimes this was observed on waking in the morning and sometimes while working or playing. The vision grew worse after the first change. A few patients reported loss of sight in one eye or in both eyes with no further change or with subsequent slight improvement. A few patients stated that vision had decreased in the two eyes gradually and at about the same rate. The two eyes of seventy-eight patients were involved, often not at the same time. Many patients complained of a large blindspot in the center of vision, and some with bilateral spots stated that they saw better in dull light. Pain was an important symptom. Twenty patients volunteered the information that the involved eye was painful on movement; others admitted having pain when questioned. The eyeball was often tender to palpation. Sometimes pain was referred to as "deep" or "behind the eyeball." Other patients had severe headaches at the time of onset. The cause of the headaches is speculative. A mild, localized meningeal involvement may be the cause in some cases. The visual acuity in the involved eyes was markedly reduced in most. The characteristic field change was a central scotoma. There was usually no change in the normal appearance of the disks in the early stages of the disease. Blurring of the margins of the disk occurred sometimes. Pallor of the optic nerve usually developed temporally after a few weeks.

The unreliability of contraction of the pupil to light as a sign of retrolbulbar neuritis was indicated by its demonstration in several normal eyes.

Convalescent Blood for Herpes Zoster Ophthalmicus.—Gundersen adds twelve cases of herpes zoster ophthalmicus to the ten reported in 1935 in which the transfusion of from 250 to 450 cc. of convalescent blood was beneficial. The result of the present cases confirm the previous conclusions. Of the twenty-two patients who were treated, eighteen retained useful vision (better than 6/18) in the affected eye and four lost useful vision. Of thirty-nine similar patients who received no specific therapy, fifteen lost useful vision and five had seriously impaired vision. The author concludes that, if the convalescent serum is given before ocular infection is well established, good results may be expected.

Archives of Surgery, Chicago

41:1-208 (July) 1940

- Traumatic Intracerebral Hemorrhage, with Particular Reference to Its Pathogenesis and Its Relation to "Delayed Traumatic Apoplexy." C. B. Courville and O. A. Blomquist, Los Angeles.—p. 1.
- Ewing's Sarcoma (Endothelial Myeloma). J. F. Hamilton, Memphis, Tenn.—p. 29.
- Catgut Sutures and Ligatures: Greater Efficacy Achieved Through Observance of Certain Details. C. F. Horine, Baltimore.—p. 51.
- Spontaneous Pneumothorax Following Positive Pressure Intratracheal Anesthesia: Report of Case. A. F. Heidrick, W. E. Adams and H. M. Livingstone, Chicago.—p. 61.
- Problem of Carcinoma of Breast: Radical Mastectomy in Ninety Cases. C. A. Kunath, San Angelo, Texas.—p. 66.
- Effects of Local Reaction in Spontaneous Tumors of Animals and Human Beings. F. M. Allen, New York.—p. 79.
- *Splenectomy in Treatment of Banti's Syndrome. E. H. Barg and J. W. Dulin, Iowa City.—p. 91.
- Demonstration of Capillary Permeability Factor in Tissue Extracts from Normal Rabbits. R. H. Rigdon, Nashville, Tenn.—p. 96.
- Capillary Permeability in Areas of Inflammation Produced by Xylene. R. H. Rigdon, Nashville, Tenn.—p. 101.
- Resection of Carcinomatous Rectosigmoid Junction with Reestablishment of Intestinal Continuity: Subsequent Report. H. R. Arnold and J. F. Shea, San Francisco.—p. 110.
- *Evaluation of Injection Treatment of Hernia in Older Patients: Three Year Statistical Analysis. L. Manoil, New York.—p. 114.
- Pathology of Shock in Man: Visceral Effects of Trauma, Hemorrhage, Burns and Surgical Operations. H. A. Davis, New Orleans.—p. 123.
- Differential Diagnosis of Mechanical and Paralytic Ileus, with Special Reference to Early Diagnosis of Strangulated Obstruction. J. B. Haworth and L. H. Garland, San Francisco.—p. 147.
- Review of Urologic Surgery. A. J. Scholl, Los Angeles; F. Hinman, San Francisco; A. von Lichtenberg, Budapest, Hungary; A. B. Heyler, Seattle; R. Gutierrez, New York; G. J. Thompson, J. T. Priestley, Rochester, Minn.; E. Wildbolz, Berne, Switzerland, and V. J. O'Connor, Chicago.—p. 154.

Splenectomy in Banti's Syndrome.—According to Barg and Dulin there have been forty-three cases since 1922 at the State University Hospitals of Iowa which have fulfilled the diagnosis of Banti's syndrome. Half of these patients (twenty-two) were treated by splenectomy and the remainder conservatively. The two groups are compared to determine the effects of splenectomy. The operative deaths numbered six (27 per cent) and two additional patients died in the hospital. Of the fourteen patients who left the hospital, twelve have been followed. Four of these have died: three from gastro-esophageal hemorrhage and one from an unknown cause. Four are alive and have been free from all symptoms for from two to nine years. Two are much improved. The remaining two have occasional esophageal hemorrhages and one of them requires frequent paracentesis. Of the twenty-one patients on whom splenectomy was not performed, six are living. Two have been in fair health, but in some of the others the symptoms showed a progressive increase. Eleven of the twenty-one are known to be dead; one lived for three years, and all the others died within one year after discharge from the hospital. The authors believe that splenectomy is the treatment of choice in Banti's disease and should be performed in the early stages. It may be contraindicated in elderly patients because of the high operative mortality, but three of the patients who were over 60 years of age have been greatly improved after operation. Splenectomy relieved the ascites. An extensive collateral circulation is developed between the region of the splenic bed and the abdominal walls. The authors do not perform an omentopexy, although in some of their recent cases the greater omentum has been rotated into the splenic bed, as it is felt that this increases the collateral circulation. Splenectomy has not assured relief

from gastro-esophageal hemorrhages. Patients with rapidly developing symptoms before operation respond poorly to splenectomy.

Injection Treatment of Hernia in Older Patients.—Manoil presents a brief analysis of cases of hernia treated by the injection method. During the period between February 1936 and February 1939, 158 hernias in 123 patients were treated by the injection method at the author's clinic. Ninety-two per cent of these patients were between 41 and 90 years of age. Recurrence took place in twenty-six, or 16.4 per cent, of this group, and five patients, or 3.2 per cent, were operated on after injection, making a total percentage of failures of 19.6. In the fifteen younger patients between 11 and 40 years of age there were no recurrences. There were no infections and no mortality. The author believes the injection treatment to be indicated in older patients who are considered poor surgical risks and because of their state of nutrition or other coexisting conditions. It is also indicated in younger patients who refuse operation but are willing to cooperate in this treatment even though it is prolonged. Best results may be expected in the case of a small inguinal hernia. This series, however, includes not only large indirect inguinal but direct inguinal, postoperative recurrent inguinal, scrotal, femoral, umbilical and postoperative ventral types. Most of these were of many years' duration. All of them can be helped provided they are completely reducible and can be kept reduced with comfort during the course of treatment. In addition to a safe and effective sclerosing solution, the use of a well fitting truss is essential. It must be worn day and night during the course of injections, which takes from six to eight weeks if given two or three times a week. Thereafter the patient may remove the truss at night but must wear it during the day for from four to six months.

Bulletin New York Academy of Medicine, New York

16:429-498 (July) 1940

- Heart Disease: A World Problem. P. D. White, Boston.—p. 431.
The Menopause. E. Shorr, New York.—p. 453.
Clinical Aspects of Rheumatic Fever in Children. A. T. Martin, New York.—p. 475.
Purposes, Function and Use of Standard Classified Nomenclature of Disease. G. Baehr, New York.—p. 483.
Adaptation of Standard Classified Nomenclature of Disease to Hospital Morbidity Reports. E. H. L. Corwin, New York.—p. 489.

Canadian Public Health Journal, Toronto

31:259-306 (June) 1940

- Postsanatorium Care of Tuberculous Patients in Ontario. C. A. Wicks, Toronto.—p. 259.
Housing and the National Housing Act. G. H. Ferguson, Ottawa, Ont.—p. 271.
Clinical Cases of Diphtheria Occurring in Patients Who Had Previously Received One Injection of Alum Precipitated Diphtheria Toxoid. J. N. Murphy Jr., E. B. Cook and S. W. Bohls, Austin, Texas.—p. 276.
Psychiatric Social Work with Recessive Adolescents. Isabel J. Dalzell, Toronto.—p. 280.
Incidence of Enterobiasis in Children in Convalescent Home in Toronto. E. Kuitunen-Ekbaum, Toronto.—p. 287.

Connecticut State Medical Journal, Hartford

4:377-436 (July) 1940

- What Do People Need for Their Health and Medical Care? H. Emerson, New York.—p. 377.
Results in Treatment of Epileptics with Sodium Diphenyl Hydantoinate (Dilantin). M. E. Brodsky, J. J. O'Neil and E. Zsiga, Bridgeport.—p. 385.
Placental Blood Bank. S. Spinner, New Haven.—p. 387.
Endometriosis. E. A. Herr, Waterbury.—p. 389.
Renal Function in Adrenal Insufficiency. D. C. Darrow, New Haven.—p. 393.
Vulvovaginitis in Children: Summary of Series of Fifty-Nine Cases. L. Newton and M. S. Popkin, Bridgeport.—p. 395.
What Is a Neurosurgical Emergency? W. J. German, New Haven.—p. 398.
Modern Treatment of Pneumonia. T. S. Evans, New Haven.—p. 400.

Delaware State Medical Journal, Wilmington

12:137-154 (June) 1940

- Hormone Therapy: Its Uses and Abuses. C. W. Dunn, Philadelphia.—p. 137.
Clinical Manifestations of Leukemia. G. E. Farrar Jr., Philadelphia.—p. 142.
Heredotraumatic Kyphosis of Bechterew. H. G. Hadley, Washington, D. C.—p. 146.

Journal of Clinical Investigation, New York

19:555-684 (July) 1940

- Iodine Components of Blood: Circulating Thyroglobulin in Normal Persons and in Persons with Thyroid Disease. J. Lerman, Boston.—p. 555.
Effect of Application of Tourniquets on Hemodynamics of Circulation. R. V. Ebert and E. A. Stead Jr., Boston.—p. 561.
Exacerbation in Chronic Glomerulonephritis. D. Seegal, J. D. Lyttle, Emily N. Loeb, Elizabeth L. Jost and Grace Davis, New York.—p. 569.
Studies on Intrapulmonary Mixture of Gases: I. Nitrogen Elimination from Blood and Body Tissues During High Oxygen Breathing. R. C. Darling, A. Courmand, J. S. Mansfield and D. W. Richards Jr., New York.—p. 591.
Id.: II. Analysis of Rebreathing Method (Closed Circuit) for Measuring Residual Air. A. Courmand, R. C. Darling, J. S. Mansfield and D. W. Richards Jr., New York.—p. 599.
Id.: III. Open Circuit Method for Measuring Residual Air. R. C. Darling, A. Courmand and D. W. Richards Jr., New York.—p. 609.
Studies on Anacidity: Hydrogen Ion Concentration of Gastric Secretion, Gastroscopic Appearance of Gastric Mucosa and Presence of Gastric Secretory Depressant in Patients with Anacidity. J. B. Kirsner, P. B. Nutter and W. L. Palmer, Chicago.—p. 619.
*Effect of Exercise on Volume of Blood. N. L. Kaltreider and G. R. Meneely, Rochester, N. Y.—p. 627.
Study of Effects of Sulfanilamide on Acid-Base Metabolism. W. W. Beckman, Elsie C. Rossmel, R. Barbara Pettengill and W. Bauer, Boston.—p. 635.
*Serum Urate in Relatives of Gouty Patients. J. H. Talbott, Boston.—p. 645.
Studies on Pain: New Method for Measuring Pain Threshold: Observations on Spatial Summation of Pain. J. D. Hardy, H. G. Wolff and H. Goodell, New York.—p. 649.
Id.: Measurement of Effect of Morphine, Codeine and Other Opiates on Pain Threshold and Analysis of Their Relation to Pain Experience. H. G. Wolff, J. D. Hardy and H. Goodell, New York.—p. 659.
Amyolytic and Phosphatase Activity of Liver Tissue in von Gierke's Disease. S. J. Thannhauser, S. Z. Sorkin and N. F. Boncoddio, Boston.—p. 681.

Effect of Exercise on Blood Volume.—Kaltreider and Meneely determined the volume of blood at rest and during and after varying grades of exercise in seven normal subjects and in five individuals with heart disease. The blood hemoglobin and viscosity, serum proteins and venous pressure were studied. In normal individuals during moderate exertion there was a prompt and definite decrease in the plasma volume accompanied by a corresponding decrease in the blood volume, while the changes in the cell volume were variable though slight. These changes were associated with an increase in the blood hemoglobin and viscosity, the serum proteins and the venous and arterial pressures. Following exercise the plasma volume gradually increased and twenty-five minutes after exercise the plasma volume, blood hemoglobin and serum proteins reached the preexercise values. During exhaustive exercise in normal subjects there was a further decrease in plasma volume accompanied by a moderate increase in the cell volume. Twenty-five minutes after exercise the plasma volume was still diminished and the blood hemoglobin and serum proteins were increased. In patients with compensated heart disease the changes in the blood volume during and following exercise were similar to those of normal subjects. The increase in erythrocytes and hemoglobin concentration resulting from exercise is brought about mainly by passage of protein-poor fluid from the vascular system into the interstitial spaces. New cells are added to the circulating blood only during severe or exhaustive exercise.

Serum Urate in Relatives of Gouty Persons.—Talbott presents data obtained from a five year investigation of 136 blood relatives of twenty-seven persons with gout. A clinical diagnosis of gout was apparent in each of the patients, and in twenty-three there was x-ray evidence of gouty arthritis. The concentration of serum urate was determined four or more times. In all but one patient it was greater than 6 mg. per hundred cubic centimeters. In patients with unexplained joint disease with no renal insufficiency or leukemia, an elevation of serum urate above 6 mg. constitutes evidence, except in patients more than 60 years of age, of gouty arthritis. Not one of the 136 relatives appeared to be suffering from gout or gouty arthritis; two had rheumatoid arthritis, six degenerative joint disease and two rheumatic heart disease. The remainder were in apparent good health. The concentration of serum urate was determined one or more times in each relative and the concentration of 102 was less than 6 mg. per hundred cubic centimeters; average, 4.6 mg. The serum urates of the remaining thirty-four relatives

ranged from 6.1 to 10.8 mg. per hundred cubic centimeters; average, 7.3 mg. The determination was repeated in thirteen of these subjects one or more times within four years of the original observation and found elevated. The serum nonprotein nitrogen concentration was less than 35 mg. per hundred cubic centimeters in each instance. Intravenous phenolsulfonphthalein and urine concentration tests were studied in a few and found normal. Other causes of increased serum urate were excluded tentatively by the medical history and by physical examination. It is concluded that an elevation of serum urate is intimately associated with the constitutional gouty diathesis and is not the result of renal disease. Three of the thirty-four subjects have since had one or more attacks of acute arthritis. One or more joints of the legs were involved. X-ray changes or subcutaneous tophi were not demonstrable. A presumptive diagnosis of gout is probably justified in these three subjects on the basis of family history, elevated serum urate and an acute attack of arthritis. Not one of the 102 subjects who had a concentration of serum urate less than 6 mg. per hundred cubic centimeters has had any acute attacks suggesting gouty arthritis.

Journal Industrial Hygiene & Toxicology, Baltimore

22:199-252 (June) 1940

- Relative Retention by Growing Rats of Lead Ingested in Water and in Food, and in Soluble and Insoluble Forms. J. B. Shields, H. H. Mitchell and W. A. Ruth, Urbana, Ill.—p. 199.
- Acute and Chronic Toxicity of Triethanolamine. V. H. Kindsvatter, Philadelphia.—p. 206.
- Exposure to Fluorine in Industry. W. Machle and E. E. Evans.—p. 213.
- Response Attending Exposure of Laboratory Animals to Vapors of Methyl Bromide. D. D. Irish, E. M. Adams, H. C. Spencer and V. K. Rowe, Midland, Mich.—p. 218.
- Determination of Carbon Disulfide in Blood and Urine. A. W. Hunter, Marcus Hook, Pa.—p. 231.
- Treatment of Casualties from Lung Irritant Gases, with Particular Reference to Use of Oxygen and Carbon Dioxide Mixture. A. T. Jones, Widnes, England.—p. 235.
- Seasonal Changes in Body's Response to Ventilatory Conditions. D. L. MacLean and R. C. Partridge, Toronto.—p. 244.
- Code for Safe Concentrations of Certain Common Toxic Substances Used in Industry. M. Bowditch, C. K. Drinker, P. Drinker, Boston; H. H. Haggard, New Haven, Conn., and Alice Hamilton, Washington, D. C.—p. 251.

Journal of Investigative Dermatology, Baltimore

3:159-250 (June) 1940

- Effect of Roentgen Rays on Skin Reactivity to Histamine and Bacterial Vaccine: Review of Literature and Discussion of Mode of Action of Roentgen Rays in Inflammatory Processes. B. Shaffer, Philadelphia.—p. 159.
- Perianal Moniliasis and Associated Pruritus Ani Cured by Specific Desensitization. L. P. Fowle, R. R. Legault, Naomi Heritage and Adelaide M. Delluva, Lewisburg, Pa.—p. 193.
- Effect of Unilateral Cervical Sympathectomy on Reactions of Skin. H. Biberstein, New York.—p. 201.
- Unresponsiveness of Human Skin to Wheal Formation. H. L. Alexander, R. Elliott and E. Kirchner, with technical assistance of D. Bottom, St. Louis.—p. 207.
- Local Allergic Phenomena in Circinary Impetigo: Contribution to Etiology of Staphylococcic Impetigo Contagiosa. S. Epstein, Marshfield, Wis.—p. 223.
- Regional Changes and Changes Caused by Age in Normal Skin: Histologic Study. W. R. Hill and H. Montgomery, Rochester, Minn.—p. 231.

New England Journal of Medicine, Boston

222:1029-1066 (June 20) 1940

- Excessive Acetylation of Sulfanilamide in Advanced Renal Disease: Report of Case. J. G. Allen, Chicago.—p. 1029.
- Use of Circulation Time Determinations in Diagnosis of Venous-Arterial Shunts. E. Yasuna and S. Kowal, Boston.—p. 1031.

222:1067-1104 (June 27) 1940

- *Effect of Sulfanilamide on Length of Life of Patients with Subacute Bacterial Endocarditis. H. H. Steele, Deadwood, S. D.—p. 1067.
- Sodium Morrhuate in Treatment of Epicondylitis of Humerus: Report of Five Cases. F. A. Slowick, Pittsfield, Mass.—p. 1071.
- Some Opportunities of the Medical Profession. J. B. Woodman, Franklin, N. H.—p. 1074.
- Electrocardiography in General Medicine. L. B. Ellis, Boston.—p. 1078.

Sulfanilamide in Subacute Bacterial Endocarditis.—In the past nine years, seventy-six proved cases of subacute bacterial endocarditis, according to Steele, were treated at the University of Chicago Clinics. The diagnosis was based on the presence of active endocarditis, fever, positive blood culture and

embolic phenomena. Eighteen of the cases were treated with sulfanilamide. Cases in which *Streptococcus viridans* was grown on blood culture were considered. These fourteen cases were studied in order to determine the effect of the drug on bacteremia, fever and time of survival. Sulfanilamide therapy had no effect on the general course of thirteen cases of subacute bacterial endocarditis. The main beneficial effect was a fall in the number of bacteria in the blood stream. In one case there was a definite drop in the temperature curve coincident with the administration of sulfanilamide; in other cases it was thought possible that lowering of the level was related to use of the drug. No severe toxic effects were noted. One case of hemolytic anemia was observed. There was one case of dermatitis believed due to sensitization of the skin to sunlight by sulfanilamide. Nausea, headache and papilledema were also noted and were believed to have been caused by the drug. Ten of the forty patients in whom the date of death could be determined had received sulfanilamide. These ten survived from one to eleven months after onset, the average being 5.6 months. In the thirty patients who had received no sulfanilamide, the time of survival ranged from two to seventeen months, the average being 5.6 months. Thus the average survival was the same in the two groups, but three of the patients who received no sulfanilamide survived longer than eleven months, whereas none of those treated with the drug did. This might be interpreted as indicating that sulfanilamide actually shortened the time of survival.

Oklahoma State Medical Assn. Journal, Oklahoma City

33:1-58 (June) 1940

- Minor Complications of Pregnancy and Their Treatment. B. D. Faris, Oklahoma City.—p. 1.
- Ocuglandular Tularemia. J. F. Gorrell, Tulsa.—p. 4.
- Management of a Few Urologic Conditions. M. H. Newman, Shattuck.—p. 5.
- Recommendations in Routine Anesthesia Procedure. H. B. Stewart, Tulsa.—p. 8.
- Management of Minor Anal Pathology. C. Rosser, Dallas, Texas.—p. 12.

Philippine Medical Association Journal, Manila

20:193-254 (April) 1940

- Fate of Culion Patients Presented to the Local Negative Examining Committee from 1922 to 1938. J. Manalang, Culion.—p. 193.
- Postgraduate Work in Pediatrics. J. S. Garcia, Dumaguete, Oriental Negros.—p. 203.
- Plea for Hematologic Appraisal of Blood of Prospective Donors. R. J. Navarro and P. L. Cabigting-Chavez, Manila.—p. 211.
- Thoracotomy in Treatment of Empyema Thoracis in Children. J. Albert and A. P. Jongco, Manila.—p. 219.

Public Health Reports, Washington, D. C.

55:1003-1056 (June 7) 1940

- Disinsectionization of Aircraft. C. L. Williams.—p. 1005.
- *Studies in Childbirth Mortality: I. Puerperal Fatality and Loss of Offspring. J. Yerushalmy, M. Kramer and E. M. Gardiner.—p. 1010.
- Leprosy: Vitamin B₁ Deficiency and Rat Leprosy. L. F. Badger, E. Masunaga and D. Wolf.—p. 1027.

Puerperal Fatality and Loss of Offspring.—Yerushalmy and his associates state that among 255,727 resident mothers of New York State (exclusive of New York City) there were 258,525 live and still births during 1936, 1937 and 1938. During this time 1,122 puerperal deaths were recorded. A thorough search of the vital statistics files produced birth and stillbirth certificates for 689 deliveries in which death of the mother occurred. For the remaining 433 deaths for which no birth certificate could be found, it was established with reasonable certainty that 224 of the maternal deaths were associated with abortion or miscarriage, seventy-four were ectopic pregnancies, ninety-three died undelivered, twenty-four probably died undelivered and in eighteen it was questionable whether death was associated with the delivery of a viable offspring or with an abortion or miscarriage. Some of these may represent unregistered births. The death certificate of infants who died within one month was matched with the birth certificate of the same infant as were the death certificates of the mothers and the birth certificates of the infants. The information from the matched certificates was brought together on a single punch card. The average interval between the birth of a child and the death of

a mother was 9.1 days. The first twenty-four hours (37 per cent) after delivery was the most hazardous time. Similarly, the first hour after the birth took the greatest toll of children. Mothers dying from hemorrhage survived the shortest average interval (2.2 days), mothers dying from septicemia the longest interval (18.6 days). The death of a mother and the loss of an offspring were associated. The puerperal fatality rate was 19.3 per 10,000 deliveries when the infant was born alive and 298.7 when the infant was born dead. The rate for mothers whose infants survived the neonatal period was 16.6 and for mothers whose infants died in less than one month it was 108. Similarly, the stillbirth rate was 27 per thousand total births for infants of surviving mothers and 300.4 for infants whose mothers died in childbirth. Septicemia was the most frequent cause of death for mothers of live births and toxemia for the mothers of stillbirths. The average interval between delivery and death for mothers whose infants were born alive was 10.9 days, for mothers of stillborn infants 4.9 days. Mortality of both mother and infant increased sharply when pregnancy terminated prematurely. The puerperal fatality rate was 20.1 when birth was at term and 141.3 when it was premature. For premature stillbirth infants it was 247.8 and the neonatal mortality rate was 373.8. Septicemia was the most common cause of death of mothers who went to term and toxemia for the mothers of premature deliveries. No difference was noted in the puerperal fatality rate by sex of the infant, while the stillbirth and neonatal rates were higher for boys than for girls. The respective rates for males and females were 29.4 and 26 for stillbirths and 34.2 and 25.6 for neonatal mortality. The puerperal fatality, stillbirth and neonatal mortality rates of plural births were three times as high as those for single births. The stillbirth rate for illegitimate infants was 60 and the neonatal mortality rate 63.2 as compared to the total respective rates of 27.8 and 30.

Southwestern Medicine, El Paso, Texas

24:185-220 (June) 1940

- Present Trend of Medical Economics. W. B. Cantrell, Gallup, N. M.—p. 185.
Tumors of Lips. G. W. Jones, Philadelphia.—p. 188.
History of Treatment of Acute Fractures of Femoral Neck. A. E. Gallant, Los Angeles.—p. 190.
Helmintic Infections. C. M. Wheeler, San Francisco.—p. 195.
Infectious Mononucleosis with Jaundice. A. A. Chapman, Sweetwater, Texas, and J. Chapman, Sanatorium, Texas.—p. 200.

Surgery, Gynecology and Obstetrics, Chicago

71:1-128 (July) 1940

- Cancer and Its Relations to Pregnancy, to Delivery and to Marital and Social Status: I. Cancer of Breast and Genital Organs. S. Peller, Baltimore.—p. 1.
Nupercaine Anesthesia. L. V. Hand and L. F. Sise, Boston.—p. 9.
Regional Fibrocystic Disease. C. O. Adams, E. L. Compere, Chicago, and J. Jerome, Traverse City, Mich.—p. 22.
Studies on Ileocecal Junction (Ileocecus). J. A. Bagen, H. R. Wesson and R. J. Jackman, Rochester, Minn.—p. 33.
Cholecholel Denervation: New Procedure for Relief of Biliary Dyskinesia. H. Reich, Newark, N. J.—p. 39.
*Cancer of Ovary. J. V. Meigs, Boston.—p. 44.
*Appendicitis Among Individuals More Than 60 Years of Age. L. K. Stalker, Rochester, Minn.—p. 54.
Effect of Pregnancy on Excretion of Intravenous Diodrast in Rabbits. E. G. Crabtree, D. Abramson and S. H. Robins, Boston.—p. 60.
Roentgenographic Diagnosis of Lipoma. H. B. Hunt and J. D. Bisgard, Omaha.—p. 68.
Cholecystojejunostomy; as Opposed to Cholecystoduodenostomy or Cholecyst-gastrostomy. F. H. Lahey, Boston.—p. 73.
*Surgical Treatment of Chronic Gastric Ulcer: Review of 272 Cases. W. Walters and O. T. Clagett, Rochester, Minn.—p. 75.
Idiopathic Segmental Infarction of Greater Omentum. B. Pines and J. Rabinovitch, Brooklyn.—p. 80.
Surgical Exposure of Ulna and Proximal Third of Radius Through One Incision. H. B. Boyd, Memphis, Tenn.—p. 87.
Congenital Rectovaginal Defects: Operative Repair. R. F. Carter and D. Lyall, New York.—p. 89.
Tubal Sterilization by the Madlener Method: Critical Analysis of Failures. A. L. Dippel, Baltimore.—p. 94.
Congenital Bilateral Absence of Kidneys: Critical Review with Report of One Additional Case. F. Hinman Jr., Baltimore.—p. 101.
Inversion of Uterus: Report of Five Personal Cases. L. E. Phaneuf, Boston.—p. 106.

Cancer of Ovary.—Meigs presents the results of 154 operations for cancer of the ovary at the Massachusetts General Hospital from 1901 through June 1934. Only twenty-five, or 15.5 per cent, of the patients are living. The tumors were of

all sorts: large, small, papillary, smooth walled, cystic, solid, solid and cystic, white, yellow, hemorrhagic. They were divided into solid (the true solid tumor, the solid tumor with necrotic areas in it and the solid tumor with definite epithelial lined cystic areas in it, papillary and not papillary) and the definite papillary cystadenoma with small or large papillary projections inside and/or outside the tumor. The entirely solid and solid plus cystic carcinoma of the ovary is by far the most serious group. About one fourth are inoperable and the symptoms are of short duration. Some of the tumors have cystic areas in them but they are usually due to necrosis. The study of these tumors has made such an impression that if in the future there is any question of an ovarian tumor in any patient, or if the ovary is hard or unusual, the patient will either be examined with the peritoneoscope or operated on. It is inexcusable to observe and wait. In patients in menopause it is his intention to be radical. In the series discussed 44.4 per cent of the tumors were bilateral and only 9.3 per cent of the patients are living. Therefore both tubes, both ovaries, the uterus and cervix should be removed if possible. Even if there is no evidence of tumor in the other ovary it should be removed. Conservation of an ovary in a patient who has a solid epithelial tumor of one ovary should not be attempted. These tumors metastasize far and wide: to the umbilicus, the axilla, the bone. Malignant papillary cystadenomas are cystic and papillary. They may have large or only small masses of papillary tissue. The wall of the cyst may be penetrated or the papillary areas may be entirely enclosed. They are frequently adherent and may become widespread throughout the peritoneal cavity. The omentum may occasionally be full of tumor. They metastasize far and wide, as do the solid tumors. Because they are papillary, which means slower growth, and fewer become densely adherent or break through the wall of the cyst, the results are better than in the solid tumor. These tumors are frequently bilateral, 32.9 per cent. It is easy to conceive that a malignant tumor may develop in the other ovary and therefore both ovaries should be removed. The prognosis of the malignant papillary cystadenoma is about the same as that of other types of malignant disease. The rupture of cysts before and during operation is condemned, but the results of the series do not support the condemnation. Spilling of cyst contents should be avoided. Roentgen treatment to date has not proved of much curative value but more modern methods may.

Appendicitis Among the Aged.—Stalker points out that from 1 to 2 per cent of all cases of acute appendicitis occur in patients more than 60 years of age. The mortality among them is reported at about 25 per cent. General peritonitis and pneumonia are the most frequent fatality causes. Pulmonary embolism, cerebrovascular accidents, heart failure, septicemia, intestinal obstruction and other conditions account for some mortality. Eighty-two patients between 60 and 78 with appendicitis were seen from 1924 through 1938 at the Mayo Clinic. The appendix was ruptured in fifty-one and appendectomy was performed in twenty-six of these and in each of the thirty-one cases without rupture. In the remaining twenty-five ruptured appendixes simple drainage was carried out in twenty with a subsequent appendectomy in eight and conservative nonoperative treatment was instituted in five. There were thirteen, 15.9 per cent, deaths in the entire series. Nine deaths occurred in the series in which the appendix was ruptured; eight were due to general peritonitis and one to pneumonia. Two of the four deaths among the thirty-one cases without rupture were due to pneumonia, one to heart failure and one to pulmonary embolism. The type of anesthesia employed seemed to have no apparent influence on the mortality rate. In the thirty-one cases in which the appendix was unruptured there were seventeen cases with gangrenous appendix and fourteen showed varying degrees of acute purulent appendicitis. The duration of the disease was of less than twenty-four hours in twenty cases, less than forty-eight hours in eight and of more than forty-eight hours in three. The history was considered atypical in twenty of these thirty-one cases. In the fifty-one cases of ruptured appendixes there were only seventeen cases in which the duration of the disease was forty-eight hours or less. General peritonitis was present in twenty-nine patients, abscess formation in eleven, gangrenous appendix and some degree of localizing peritonitis in seven. The

history in at least thirty of these fifty-one patients was considered atypical. The symptoms were atypical in that they simulated intestinal obstruction and carcinoma. Any patient in this age group in whom lower abdominal cramplike pains develop with localization and tenderness over McBurney's point and with a leukocytosis must be suspected of having acute appendicitis. The peritoneum and the appendix of a patient in the late decades react differently to inflammation than in youth. The appendix shows an increasing amount of lymphoid tissue up to the age of 20, but from this period on atrophic and fibrous changes occur. The sensitivity of these people to pain is less and psychologically they are inclined to conceal illness. The presence of constipation in a large percentage of these patients seems significant. The appendicitis in many of these cases could be explained on these factors with a certain degree of appendical obstruction by fecaliths, anatomic appendical deformity, adhesive bands, contraction of the mesentery and the like. When obstructing factors are present and there is an already retarded circulation, with a decreased tissue resistance due to the disappearance of the lymphoid elements, it seems reasonable that the course of the disease should be rapid with early gangrene, perforation and peritonitis. Operation in this group must be modified to a certain extent. Not only is the patient a poor operative risk demanding the minimum of manipulation and anesthesia, but the appendix is almost always gangrenous or about to become so. Peritonitis is usually present and further dissemination of the infection should be avoided by conservatism in surgical intervention. Often simple drainage without further exploratory measures will bring about the best results.

Surgical Treatment of Chronic Gastric Ulcer.—Walters and Clagett report 272 consecutive cases of chronic gastric ulcer in which operation was performed at the Mayo Clinic followed for from one to five years. There were 220 men to fifty-two women, or a ratio of about 4.5:1. The majority of the lesions developed along the lesser curvature close to the angle of the stomach. The one major complication to which gastric ulcer is but duodenal ulcer is not subject is malignant change. The authors believe all gastric ulcers must be considered malignant until proved otherwise and should be treated surgically if they fail to respond promptly to medical management. When the symptoms have been of short duration, the lesion small and uncomplicated and the patient less than 40 years of age, medical management may be indicated. If the pain is relieved, the blood disappears from the stool, and the niche, on x-ray examination, disappears, the patient may be considered to have a benign ulcer. However the patient must continue medical management at home and undergo x-ray reexamination at least every three months. If at any time there is any evidence that the lesion has not remained completely healed, surgical exploration should be advised. Surgical treatment of chronic gastric ulcer is almost always indicated if the symptoms have been of long duration or have not responded to adequate medical management. Likewise, operation may be indicated if the symptoms are severe and disabling but of short duration. Surgical intervention is indicated in cases of bleeding, perforating and obstructing gastric ulcers. Posterior Pólya resection was used for 131 of the 272 patients, knife or cautery excision of the lesion combined with gastro-enterostomy was used in fifty cases and other procedures were used much less frequently but in some cases to good advantage when resection or excision and gastro-enterostomy were not feasible. Only one patient of the 162 who answered the questionnaires classified himself as having a poor or unsatisfactory result. This patient had had a simple excision of the ulcer, a procedure which is not recommended. The results were approximately equal for all types of surgical procedures indicating that the operation be fitted to the patient. Gastro-enterostomy without excision of the gastric ulcer seemed to give the least satisfactory results. However, on some occasions no other procedure is advisable or technically feasible. There was only one case of possible bleeding following operation and no cases of gastrojejunal ulcer were definitely proved following any of the procedures performed; however, some patients in each group at times had some mild distress. Disturbing symptoms or recurrence of ulceration is seldom encountered following operation.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Disease in Childhood, London

15:65-128 (June) 1940

***Syndrome Characterized by Ectodermal Dysplasia, Polydactyly, Chondrodysplasia and Congenital Morbus Cordis:** Report of Three Cases. R. W. B. Ellis and S. van Creveld.—p. 65.

Clinical Picture of Staphylococcal Infections in Newborn. Jean Margery Cass.—p. 85.

***Vitamin K in Prenatal Prevention and Postnatal Treatment of Hemorrhagic Disease of Newborn.** I. N. Kugelmass.—p. 97.
Lingual Application of Eumydrin in Treatment of Congenital Pyloric Stenosis. A. Wallgren.—p. 103.

Syndrome of Congenital Abnormalities.—Ellis and van Creveld observed in two children the following congenital abnormalities: ectodermal dysplasia affecting the hair, teeth and nails; polydactyly, chondrodysplasia, and congenital morbus cordis. The clinical picture is so striking that they believe a description of the syndrome is justified. Many atypical cases of achondroplasia and chondro-osteodystrophy with associated abnormalities have been recorded, but no detailed description of the syndrome is to be found. Some clinical particulars of a child who is an incomplete example of the same syndrome has been reported by McIntosh in 1933. Another instance is included in the present series. The most significant points in the family history of the three cases are that the parents of two were first cousins, and in no case were any of the features of the syndrome known to have existed in relatives. This is a reliable observation, for, with the exception of congenital morbus cordis, any one of the components (ectodermal defects, chondrodysplasia and polydactyly) would have excited comment in the family. It is therefore suggested that the syndrome had been inherited as a recessive gene or genes and had reappeared on the union of two individuals both carrying the recessive character. The ectodermal dysplasia must be considered as distinct both from the anhidrotic type, which occurs as a sex linked recessive or incomplete dominant, and from hypotrichosis and dystrophy of the nails, which occurs as a dominant. Polydactyly may occur as either dominant or recessive, but true achondroplasia is probably an incomplete dominant. Possibly a linkage of recessive genes would account both for the variety of the structures involved and for the extreme rarity of the syndrome. If such were the case, one might expect to find one or more components of the syndrome appearing separately in collaterals. In addition to the Laurence-Moon-Biedl syndrome and examples of ectodermal defect linked with abnormalities of the mesoderm, conditions which excite comparison are arachnodactyly, cleidocranial dysostosis and gargoylism. Each of these conditions shows a combination of mesodermal and ectodermal defects, and it remains to be proved whether they are the result of a linkage of genes or whether a single gene is responsible.

Vitamin K for Hemorrhagic Disease of Newborn.—Kugelmass states that each case of hemorrhagic disease of the newborn differs in the cause and course but that the bleeding is invariably due to prothrombin deficiency. The mild form of this disease is undoubtedly self limited and some cases are not recognized. Two of ten cases were discovered in the course of routine clotting time determinations. Severe cases respond poorly to all forms of therapy. Waddell and Guerry reported a carefully controlled human experiment: A mother had given birth to four successive infants with fatal hemorrhagic disease confirmed by necropsy. The low prothrombin content during her fifth pregnancy was brought to normal levels by an adequate diet high in fat and protein. The fifth infant was normal and without hemorrhagic symptomatology to date. Her sixth pregnancy was characterized by a similar decrease in the prothrombin level, but she refused nutritional therapy and gave birth to an infant with severe hemorrhagic disease. During her seventh pregnancy the prothrombin level was raised by adequate diet and the infant was normal. A clear-cut case of antepartum prevention of potential hemorrhagic disease was that of an undernourished woman who had given birth to a melenic infant. Since the onset of her menstruation she had occasional nosebleeds, oozing from the gums, mild metrorrhagia and ecchymoses from

easy bruising. These manifestations cleared during a previous pregnancy and since the onset of the present pregnancy, when a low prothrombin level was correlated with a limited dietary intake of a food faddist, apparently deficient in vitamin K, and the vitamin also decreased by persistent colonic irrigations. Her unstable blood clotting mechanism was corrected by the administration of an extract of vitamin K with each meal and an adjusted dietary regimen. At term a normal male infant was born with no evidence of hemorrhagic manifestations. Two other cases were similarly treated with vitamin K. Vitamin K administered in two mild cases of hemorrhagic disease of the newborn cleared the condition within twenty-four hours. The spontaneous bleeding ceased more rapidly than expected of a self-limited condition. Vitamin K is thus of equal value with blood transfusion in mild cases, the one forming prothrombin and the other providing it. Mild cases of hemorrhagic disease of the newborn offer no final criteria of the curative value of vitamin K because coexisting hematogenous jaundice may diminish absorption and utilization of the vitamin and thus interfere with the synthesis of prothrombin. The ability of vitamin K to raise prothrombin levels in the blood of the newborn is no index of its efficacy in hemorrhagic disease from injury to the reticulo-endothelial system involved in the formation of prothrombin. Vitamin K is nevertheless a valuable adjuvant in the treatment of latent or active hemorrhagic disease of the newborn. Treatment should not be limited to a precursor of prothrombin when the active substance, blood, can be injected. There is no indication for the use of vitamin K in a routine manner to protect the newborn from possible hemorrhagic disease. An abnormally high prothrombin content cannot prevent blood from oozing through a damaged vascular system unless the entire circulation is clotted. The contention that the prevention of hemorrhagic disease of the newborn will diminish intracranial hemorrhage is only partially true, because the former is a disease of the blood and the latter a result of trauma to the vascular system. The relative frequencies of hemorrhagic disease and intracranial hemorrhage are about one to twenty and the two diseases are more often mutually exclusive than coexistent.

British Journal of Experimental Pathology, London
21:117-160 (June) 1940

- Relation of Sumatran Mite Fever to Tsutsugamushi Disease of British Malaya. R. Lewthwaite and S. R. Savor.—p. 117.
Effect of Lysozyme on Union Between Phage and Susceptible Bacillus Megatherium. Antoinette Pirie.—p. 125.
Failure of Intraperitoneal Injection of 3:4-Benzpyrene Solution to Increase the General Susceptibility to Cancer. S. Beck.—p. 133.
Pyridine-3-Sulfonic Acid and Its Amide as Inhibitors of Bacterial Growth. H. McIlwain.—p. 136.
Influenza Virus Infections of Chick Embryo Lung. F. M. Burnet.—p. 147.
Application of Sharples Centrifuge to Study of Viruses. J. McIntosh and F. R. Selbie.—p. 153.

Indian Medical Gazette, Calcutta
75:257-320 (May) 1940

- Role of Oblique Osteotomy of Upper End of Femur in Hip Joint Surgery. M. G. Kini.—p. 257.
Outbreak of Epidemic Dropsy. R. N. Chopra, C. L. Pasricha and K. Banerjee.—p. 261.
Observations on Amebiasis and Its Treatment. M. Mayer.—p. 262.
Quinine and Atabrine in Control of Malaria, with Special Emphasis on Practical and Economic Points of View. B. A. Lamprell.—p. 266.
Mode of Origin and Progress of Anemia in Pregnant Tea Garden Coolies. K. P. Hare.—p. 274.
Simple and Efficient Remedy in Treatment of Scabies. F. A. B. Sheppard.—p. 279.
Simple Method of Tomography. R. Viswanathan and P. Kesavaswamy.—p. 279.
Streptococcus Pyogenes in Throats of Sample of Healthy Individuals. C. L. Pasricha and G. Panja.—p. 282.
Natural Leptospirosis Infection in Rat Population of Calcutta. B. M. Das Gupta.—p. 284.

Treatment of Scabies.—Sheppard used the following procedure in the treatment of 210 cases of scabies: All of the body below the neck was painted with a 40 per cent hypotonic solution of sodium thiosulfate. This was allowed to dry for about fifteen minutes and then painted with a 5 per cent solution of hydrochloric acid. The whole procedure was repeated in two

hours and then the linen was changed. The procedure was repeated the next day. The patient was not permitted to take a bath before twelve hours after the conclusion of the second day's treatment. An interval of from three to five days was allowed to elapse before a second course of treatment was started. For children less than 7 years of age the solution used is half strength. The treatment has been rapidly and highly successful in the papular type of scabies. In the pustular type it was too irritant for comfort and the ordinary sulfur ointment treatment was used in such cases until the pustules dried up, and then the case was treated on the same lines as a papular case. Of the 210 patients treated 177 were cured and twenty-five were relieved. The advantages of the treatment are that it is relatively clean, and, except in the worst cases, hospitalization is unnecessary.

Journal Obst. & Gynaec. of Brit. Empire, Manchester
47:237-364 (June) 1940

- High Puncture of Membranes: Review of 842 Inductions of Labor with Drew Smythe Catheter. G. Maizels.—p. 237.
*Preliminary Observation on Gonococcal Vulvovaginitis in Children in Bengal. C. L. Mukherjee.—p. 275.
Eclampsia: Clinical and Biochemical Study. A. L. Mudaliar, A. S. M. Nayar and M. K. K. Menon.—p. 291.
Subcutaneous Emphysema Complicating Labor with Discussion as to Theories of Causation. Case. J. Kinloch-McCollum.—p. 309.
Physical and Psychologic Symptoms of Menopause. J. G. McDowell and A. S. Paterson.—p. 319.
Endometriosis of Left Cardinal Ligament Simulating Carcinoma of Cervix. A. F. Anderson.—p. 327.
Intrapartum Fetal Death Due to Intra-Uterine Rupture of Umbilical Vein. D. Friedlander.—p. 334.

Gonococcal Vulvovaginitis in Children.—Mukherjee points out that of 1,138 cases of gonorrhea treated at the clinic 125, or 11 per cent, occurred in girls under 11 years of age. The real incidence would possibly be much lower if the infection in women were more frequently recognized. Forty of the children were treated by orthodox procedures, twenty-five with female sex hormone, fifty with estrogen and local medication and ten with sulfanilamides. The cures, relapses and failures with local treatment were respectively 66.2, 22.5 and 15 per cent, with estrogen they were 44, 32 and 24 per cent and with combined treatment they were 84, 12 and 4 per cent. Of the ten cases treated with sulfanilamide seven were cured after three weeks of treatment, two after seven weeks of treatment and one could not be followed up.

Presse Médicale, Paris

48:489-512 (May 15-18) 1940

- Indications and Technic of Oxygen Therapy in Cardiovascular Disorders. C. Laubry, F. Joly and C.-O. Guillaumin.—p. 489.
Contrivances for Practice of Oxygen Therapy. L. Binet and Madeleine Bochet.—p. 492.
Usefulness of the Psychogalvanic Reflex in Neurology. N. Jonesco-Sisesti and L. Copelman.—p. 494.
*Tetanus. L. Rouquès.—p. 497.

Tetanus.—Rouquès calls attention to the successful experiments with tetanus anatoxin prepared from tetanus toxin subjected to the combined action of formol and heat. This substance was observed to create and develop antitetanic immunity without local or general reactions. The therapy of tetanus is well established. It consists of early and massive administration of serum subcutaneously or intramuscularly and of anesthesia. Serum therapy, however, is solely antitoxic and has no effect on the spores that may remain in the wound. To complement the passive immunity produced by the serum with an active immunity produced by anatoxin vaccination, a mixed treatment has been recommended. This consists of injecting immediately after the diagnosis is made one massive dose of tetanus antitoxin (150,000) and a dose of 2 cc. of anatoxin, injecting further doses of anatoxin in quantities increasing in mathematical proportion, 2, 4, 6 cc. for example, five or six days apart. To avoid serious accidents the massive dose of antitoxin may be divided into several smaller doses, provided the serum is strong in antitoxin. For previously vaccinated patients with a single wound one further injection of tetanus anatoxin has been recommended. It is well to examine in every instance the place

of entry and excise possibly the cicatrix at the first symptoms of the disease. For anesthesia chloral and chloroform are used; in the presence of liver damage the chloroform is replaced by nitrous oxide or ether.

Revue Française de Pédiatrie, Paris

15:393-468 (No. 5) 1939-40

*Pneumothorax in the Newborn. M. Péhu and R. Lefebvre des Noettes.—p. 393.

An Ultramicro-Analytic Method for Determination of Calcium Level in Blood Plasma. E. Josefsson.—p. 417.

Otitis and Antritis of the Newborn and Their Reactions on Digestion. E. Schneegans.—p. 425.

Pneumothorax in the Newborn.—Péhu and Lefebvre des Noettes review the etiology, symptoms, diagnosis, therapy and prognosis of pneumothorax, with a citation of illustrative cases from the literature and an extensive bibliography. The term "newborn" is restricted by them to the first four weeks of postnatal life. Among the causes of neonatal pneumothorax the authors list obstetric trauma; artificial stimulation of respiration; brain lesions not due to natal traumatism such as intracranial hemorrhages; obstructions in the trachea such as congenital goiter and hypertrophy of the thymus; infectious disease complications such as lobar pneumonia; accidents caused by hypodermic puncture; bronchial and cardiac malformations, and a variety of causes of undetermined origin involving fundamentally rupture of the superficial alveoli of the lungs. Pulmonary tuberculosis may be eliminated as a causative agent. Three types of neonatal pneumothorax are distinguished (partial, total, high tension) and their typical roentgenographic features indicated. Dyspnea and cyanosis, characteristic signs of pneumothorax of the newborn, need to be diagnostically differentiated from pathologic conditions such as normal neonatal cyanosis, those occurring in cardiovascular malformations, and from tracheal thymus pressure, bronchial or bronchopulmonary air cysts, pulmonary atelectasis and bronchopneumonia. In all of these, clinical and roentgenoscopic observations combine to disclose the real facts. Prognosis is favorable in pneumothorax of traumatic origin and in congenital bronchial malformation in which no pathologic signs manifest themselves. In high tension pneumothorax prognosis is likewise good, provided pleural punctures succeed in preventing recurrence of air infiltration. The authors point out that the mechanism of the physiologic function of breathing when the infant first establishes independent respiration is still imperfectly understood, no elucidating roentgenograms yet existing. These mechanical factors occupy an important place in the pathogenesis of infant pneumothorax.

Giornale di Clinica Medica, Parma

21:533-624 (May 20) 1940. Partial Index

*Electrocardiograms in Carbon Monoxide Poisoning. G. Rastelli.—p. 533.
Relations Between Heart Diseases and Pulmonary Tuberculosis. F. Robuschi.—p. 587.

Electrocardiograms in Carbon Monoxide Poisoning.—Rastelli studied electrocardiograms of two lots of rabbits before and in the course of acute and chronic experimental carbon monoxide poisoning, and those of forty-two victims. Typical transient modifications of the ventricular complex were present in the electrocardiograms of rabbits with acute poisoning. The alterations of the electrocardiogram in acute poisoning in man, shortly after the occurrence of poisoning, consisted of a low potential action of the myocardium, auricular fibrillation, premature ventricular contraction and predominance of the left ventricle. The electrocardiograms of victims of acute poisoning became normal, in the majority of cases, in about two months. Certain permanent electrocardiographic alterations remained in some of the cases. They consisted of typical triphasic initial complexes in the second and third leads. Alterations of this type remained in the electrocardiograms of five out of twenty victims of acute poisoning in whom electrocardiograms were taken at periods of from two to five years after the acute poisoning. They were present in five out of twenty victims with chronic carbon monoxide poisoning. These alterations were of a type which, according to Katz and Slater, indicate damage to the coronary arteries. The author concludes that carbon monoxide poisoning causes either transient or permanent lesions

in the heart with consequent transient or permanent alterations in the electrocardiogram. Transient lesions are caused by anoxemia due to poisoning, whereas permanent lesions are the result of damage to the endothelial lining of the coronary arteries, as carbon monoxide has a specific injurious effect on the epithelium of the arteries.

Policlinico, Rome

47:169-212 (May 15) 1940. Surgical Section. Partial Index

*Histology of Some Renal Tumors. S. Ciancarelli.—p. 169.

Lipoma of Small Intestine: Two Cases. L. Gabbianelli.—p. 181.

Constitution of Adventitia Capsule of Echinococcus in Relation to Seat of Echinococcosis. A. Ligas.—p. 188.

Histology of Some Renal Tumors.—Ciancarelli discusses the question of the epithelial or adrenal origin (Gravitz) of renal tumors, particularly of hypernephroma, based on a study of four renal tumors removed by nephrectomy. The microscopic diagnosis was hypernephroma in two and papillary adenocarcinoma in two. The two patients with hypernephroma did not exhibit symptoms of endocrine disturbance, and one gave a negative Aschheim-Zondek reaction. The tumor was located in the upper pole of the kidney in one case and in the lower lobe in the other. The author found that the microscopic structure of hypernephroma and of papillary adenocarcinoma was similar. Cells with either clear or dark protoplasm were present in both tumors. The microscopic preparations of hypernephroma in one of the cases showed tubular structures of the type present in adenocarcinoma. Adrenal tumors do not present tubular structures. He believes that papillary adenocarcinoma and hypernephroma are of the same renal epithelial origin and that hypernephroma is nothing more than a variety of a renal epithelioma. The name "hypernephroma" possesses no histogenic significance. The theory of adrenal origin of hypernephroma (embryonal aberrant adrenal tissue, according to Gravitz) is based on an erroneous interpretation of the microscopic appearances of the tumor cells. The latter are more or less loaded with fat because of fatty degeneration from nephritis and may assume an appearance similar to that of adrenal cells.

Wiener klinische Wochenschrift, Vienna

53:455-474 (June 7) 1940

Timely Problems in Treatment of Diabetes. W. Falta.—p. 455.

*Vitamin C and Gastric Function. F. Lucksch.—p. 457.

Surgical Treatment of Contractions. P. Huber.—p. 459.

Treatment of Disturbances in Blood Perfusion of Arterial System. R. Singer.—p. 462.

Medicinal Treatment of Ventricular and Duodenal Ulcer. A. Breuer.—p. 466.

Results of Investigations by Physician Supervising Sports at University Institute for Physical Exercises in Vienna. W. Birkmayer.—p. 467.

Vitamin C and Gastric Function.—Regarding disordered gastric function as the cause of pellagra, Lucksch treated pellagral patients with a preparation of hog stomach. The same preparation was given also to schizophrenic and encephalitic patients with a deficiency of hydrochloric acid. It was found that the secretion of hydrochloric acid was stimulated by this medication and that the symptoms of pellagra subsided. Vitamin C also had been found helpful for pellagrous patients, but at the time this was first noted it was impossible to investigate the gastric secretion. Later the author investigated the effect of vitamin C, vitamin B, liver, liver preparations and hydrochloric acid pepsin on the gastric secretion of patients with hydrochloric acid deficiency. The hydrochloric acid pepsin was entirely ineffective. The effect of the vitamin B preparation was somewhat doubtful, but the vitamin C proved highly effective. The author points out that this action of vitamin C on the deficiency of hydrochloric acid is a new discovery, for although the literature reports favorable effects of vitamin C on hyperacidity there are no reports on its efficacy in hypo-acidity. This action of vitamin C can probably be explained by the fact that it is a substance which stimulates the entire metabolism and thus also the organs with functional insufficiency. The author suggests that it might be advisable to give vitamin C in pernicious anemia in addition to liver therapy. These experiments raise the question whether parenterally administered vitamin C acts as a substitute for its insufficient enteral absorption in pellagra or whether its curative action is due chiefly to the restoration of the gastric function.

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ORTHOSTATIC HYPERTENSION

THE EFFECT OF NEPHROPTOSIS ON THE
RENAL BLOOD FLOW

CHAIRMAN'S ADDRESS

WILLIAM S. McCANN, M.D.

WITH THE COLLABORATION OF
MONROE J. ROMANSKY, M.D.

ROCHESTER, N. Y.

In the light of the observations of Goldblatt¹ that partial ischemia of the kidneys produced hypertension in experimental animals, many clinical and pathologic observations have been made illustrative of a variety of conditions in which renal ischemia occurs in association with elevation of blood pressure. Atheroma at or near the aortic orifice of the main renal vessels appears to be one of the most frequent;² pyelonephritis, glomerulonephritis and a variety of urologic conditions involving urinary obstruction have been described.³

The observation of marked ptosis of the kidneys of a woman who had exhibited what was taken to be a benign essential hypertension for a number of years and who entered a malignant phase of the disease with eclamptic phenomena and evidence of cerebral and neuroretinal edema raised the question as to whether the ptosis, by increasing ischemia of the kidneys, might have been responsible for the transformation from a benign to a malignant hypertension.⁴ In the search for the answer to this question a number of women with hypertension and renal ptosis were found whose blood pressure fell when they were kept strictly in a recumbent posture, either to normal or to levels distinctly below the usual range of blood pressure observed when they were not confined strictly to this posture. Some of these patients have been studied by means of pyelograms made in both the erect and the recumbent posture to reveal the degree of ptosis of the kidneys and subsequently by comparing the effects of posture on the inulin clearance (glomerular filtration rate) and on the diodrast clearance (total renal plasma flow).

Dr. Romansky is the James Gleason Fellow in Medicine.

Read before the Section on Practice of Medicine at the Ninety-First Annual Session of the American Medical Association, New York, June 13, 1940.

From the Department of Medicine, University of Rochester School of Medicine and Dentistry, and the Medical Clinics of the Strong Memorial and Rochester Municipal hospitals.

1. Goldblatt, Harry: Studies on Experimental Hypertension: V. The Pathogenesis of Experimental Hypertension Due to Renal Ischemia, *Ann. Int. Med.* **11**: 69 (July) 1937.

2. Blackman, S. S., Jr.: Arteriosclerosis and Partial Obstruction of the Main Renal Arteries in Association with "Essential" Hypertension in Man, *Bull. Johns Hopkins Hosp.* **65**: 353 (Nov.) 1939.

3. Maher, C. C., and Wosika, P. H.: Urological Hypertension: A Study of One Hundred and One Cases, *J. Urol.* **41**: 893 (June) 1939.

Shroeder, H. A., and Steele, J. M.: Abnormalities in the Urinary Tract in "Essential" Hypertension, *Proc. Soc. Exper. Biol. & Med.* **39**: 107 (Oct.) 1938.

4. McCann, W. S.: Chronic Pyelonephritis: A Cause of Hypertension and Renal Insufficiency, *New York State J. Med.* **40**: 400 (March 15) 1940.

The method employed was based on the work of Homer Smith and his colleagues⁵ and on the technic of White and Rolf for microdetermination of diodrast.⁶ By means of intravenous priming and sustaining solutions of inulin and diodrast in 1 per cent saline solution, which were introduced simultaneously, the desired blood levels of from 100 to 150 mg. per hundred cubic centimeters of inulin and from 0.5 to 5 mg. per hundred cubic centimeters of diodrast could be maintained.

Tests were made on fasting patients in both the erect and the recumbent position. In the former position the test was usually carried out first with the blood pressure maintained at its high ambulatory level. Then, following a period of recumbency of about two to five days, during which the blood pressure fell to a constant level, the test was repeated.

From 1,000 to 1,500 cc. of water was administered orally before each test and not more than from 150 to 200 cc. of water was given during the procedure. The entire test ran for ninety minutes, with the last hour divided into four fifteen minute periods for the collection of blood and urine specimens. From these specimens the glomerular filtration and total blood flow were determined. In the calculations the plasma clearance of diodrast is determined and the total blood flow estimated by adding the volume of red cells shown by the hematocrit.

ABSTRACT OF CASES

CASE 1.—R. H., a woman aged 56, was known to have had hypertension for twenty years. She had no urinary symptoms except that many years before she had experienced burning and frequency of urination. Within the past year cerebral and ocular symptoms had become more severe, and recently several mild hypertensive crises had occurred. Examination revealed marked ptosis of the right kidney.

In figure 1 are shown the tracings of the pyelograms made in both the erect and the recumbent posture, superimposed. Ptosis was more marked on the right side and a moderate hydronephrosis was revealed. It will be noted that the total blood flow was markedly less in the erect than in the recumbent position and that a marked difference in blood pressure levels was observed, being lower in recumbency. The change in glomerular filtration was not large, being slightly lower in recumbency. The filtration fraction was distinctly higher in the erect posture, a fact which may be taken as evidence that the efferent arterioles were constricted and that this was a major factor in the diminution of blood flow observed.⁷

Figure 2 records the daily blood pressure variations during the period of observation in the hospital. The pressure on admission was 240 systolic, 120 diastolic, which is distinctly higher than that observed on the day of the test in the erect posture, which followed a period of rest in bed. It is likely

5. Smith, H. W.; Goldring, William, and Chasis, Herbert: The Measurement of the Tubular Excretory Mass, Effective Blood Flow and Filtration Rate in the Normal Human Kidney, *J. Clin. Investigation* **17**: 263 (May) 1938.

6. White, H. L., and Rolf, Doris: A Rapid Micro Method for Determining Diodrast and Inorganic Iodide Iodine in Blood and Urine, *Proc. Soc. Exper. Biol. & Med.* **42**: 1 (Jan.) 1940.

7. Chasis, Herbert; Ranges, H. A.; Goldring, William, and Smith, H. W.: The Control of Renal Blood Flow and Glomerular Filtration in Normal Man, *J. Clin. Investigation* **17**: 683 (Sept.) 1938.

that the record would have shown an even more striking difference if the test in the erect posture had been made during customary ambulatory activity.

Oct. 31, 1939, the right kidney was exposed by Dr. W. W. Scott in order to perform a nephropexy. An aberrant vessel was found entering the upper pole of the right kidney. This

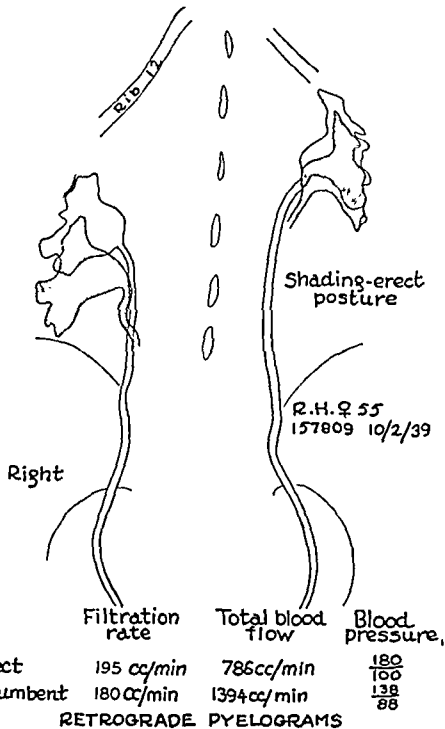


Fig. 1 (case 1).—Tracings of the retrograde pyelograms superimposed, showing ptosis and moderate hydronephrosis of the right kidney and comparison of the total blood flow, filtration rate and blood pressure in both the erect and the recumbent posture.

was divided and found to be markedly sclerotic. Nephropexy was performed. Following this operation the blood pressure remained elevated. On December 6 it was still high, 204 systolic, 110 diastolic. Prior to entry into the hospital the blood pressure had risen frequently to critical heights (from 240 to 260),

TABLE 1.—Hypertension with Nephroptosis

Patient.....	R. H.	R. W.	R. L.	K. C.	H. B.
Age.....	56	22	31	43	47
Sex.....	♀	♀	♀	♀	♀
Blood pressure					
Erect.....	180/100	176/128	164/104	160/110	230/140
Recumbent.....	138/ 88	124/100	142/ 82	110/ 72	196/120
Glomerular filtration, cc./min.					
Erect.....	195	90	108	96	84
Recumbent.....	180	106	98	100	86
Total blood flow, cc./min.					
Erect.....	786	642	663	625	403
Recumbent.....	1,394	1,003	919	790	572
Ratio: Diodrast iodine/Inulin					
Erect.....	2.31	4.42	3.31	3.99	3.07
Recumbent.....	3.89	5.87	5.03	4.81	4.26
Filtration fraction, per cent					
Erect.....	43.3	22.6	30.2	25.1	32.6
Recumbent.....	25.7	17.0	19.8	20.8	23.5
Hematocrit.....	46	38	46	39	36
Nephroptosis.....	R	L	R	R	R
	moderate hydro-nephrosis	with torsion			marked with hydro-nephrosis

Min. = minute.

during which episodes cardiac, cerebral and ocular symptoms occurred. Since operation these episodes have not occurred and the patient has been symptomatically improved. The persistence of elevation of the blood pressure may be explained by the sclerotic condition of the renal arteries observed in the aberrant vessel and may have been in part due to the further increase in

renal ischemia resulting from the division of this vessel. The latter possibility is further suggested by the fact that strict limitation to recumbency prior to operation brought the blood pressure as low as 138 systolic, 88 diastolic on October 4. Recently the blood pressure has been decreasing slowly.

CASE 2.—R. W., an unmarried woman aged 22, was known to have had hypertension for eight years. Her only symptom was frequency of urination, five or six times daily. There was no nocturia. Pyelograms revealed ptosis and torsion of the left kidney.

In figure 3 are shown the superimposed tracings of the retrograde pyelograms. The total blood flow was considerably less in the erect posture and the blood pressure higher than in recumbency. The glomerular filtration rate was also higher in recumbency, yet the filtration fraction was higher in the erect posture.

Observations of the blood pressure during ambulatory activities were usually about 185 systolic, 120 diastolic. In figure 4 are shown the daily observations of the maximum and minimum ranges of the systolic and diastolic pressures. It will be noted that the blood pressure fell steadily during four days of rest in bed and rose sharply on the fifth day when she was allowed to be up, again falling when confined to bed in strict recumbency.

CASE 3.—R. L., a woman aged 31, had been known to have hypertension for ten years following a late toxemia of pregnancy. Intravenous pyelograms revealed considerable ptosis of the right kidney.

Figure 5 shows the superimposed tracings of kidney shadows. The total blood flow was less in the erect posture and the blood pressure was higher, and the filtration fraction increased from 20 per cent in recumbency to 30 per cent when erect. In the outpatient clinic her usual blood pressure was about

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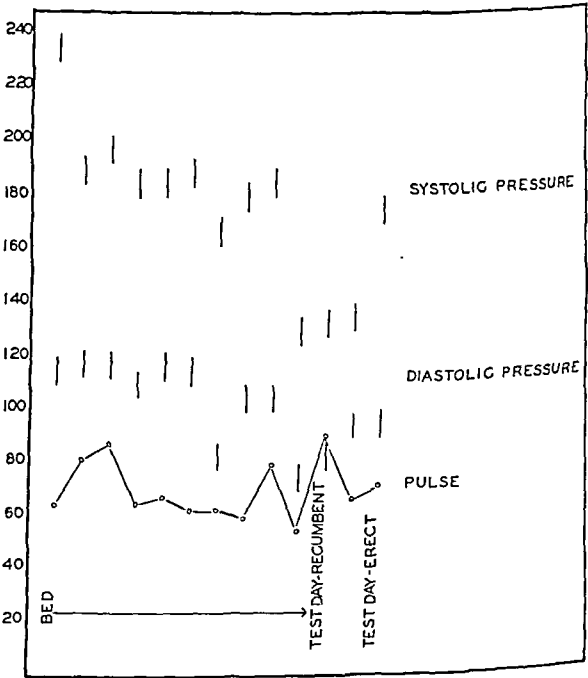


Fig. 2 (case 1).—Daily observations of the maximal and minimal systolic and diastolic blood pressure.

180-200 systolic, 100-120 diastolic. In figure 6 are shown the daily blood pressure variations. It is probable that the differences in the tests would have been more striking if the tests in the erect posture had been carried out in the outpatient department. Efforts to correct the ptosis by means of a belt with a pad were not successful in bringing a return to normal blood pressure. Nevertheless the patient did experience symptomatic relief.

CASE 4.—K. C., a married woman aged 43, was known to have had several miscarriages and two abortions with infection. Nine years ago her blood pressure was normal. Hypertension was first observed eight years ago. During the past year she had increasing angina pectoris.

In figure 7 are shown tracings of the kidney shadows with intravenous pyelograms in both postures. A lower blood pressure and a higher blood flow were noted in recumbency. In the test made in the erect posture the blood pressure was only 160 systolic, 110 diastolic, although from her record as an outpatient it was 180-200 systolic, 90-100 diastolic. More striking changes in blood flow would doubtless have been observed if the patient had engaged in greater activity in the erect posture prior to the test. She had been confined to bed the day before. The character of the blood pressure variations from day to day are shown in figure 8. Anginal symptoms occurred regularly at the peak of the orthostatic elevations of blood pressure.

CASE 5.—H. B., a married woman aged 47, had probably had onset of hypertension in her first pregnancy twenty years before, when she had a marked urinary infection. Cerebral and ocular

In figure 10 are shown the day to day observations of the blood pressure before operation. It will be noted that rest in bed had little effect on the blood pressure. It is probable that the hypertension is chiefly to be attributed to long-standing pyelonephritis and accompanying vascular sclerosis, to which the ptosis added but an increment to an underlying renal ischemia.

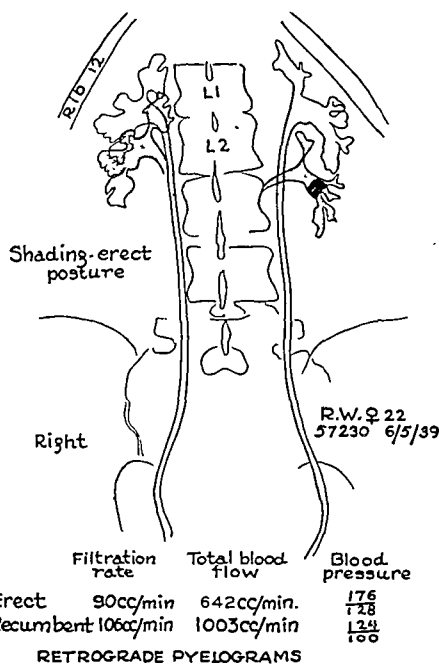


Fig. 3 (case 2).—Tracings of the retrograde pyelograms superimposed, showing ptosis and rotation of the left kidney, with comparison of the total blood flow, glomerular filtration and blood pressure in the erect and with those in the recumbent posture.

symptoms had increased in severity during the past four years. Periodically alternating oliguria and polyuria were noted. The urine had been sterile on culture before operation, though the sediment contained an excessive number of leukocytes. Renal function as measured by the phenolsulfonphthalein test was found to be quite good.

In figure 9 are shown tracings of the retrograde pyelograms in both postures. There was found to be marked ptosis on the right with dilatation of the ureter and some deformity of the pelvis. A moderate fall in blood pressure with an increase in blood flow was noted in the recumbent posture. Very little change in glomerular filtration occurred, although the filtration fraction was greater in the erect posture.

An operation for nephropexy was performed on the right kidney, which was subsequently complicated by the appearance of a large mass in the right side of the abdomen. This was believed to be a hematoma, since it gradually disappeared. Following operation, culture of the urine was persistently positive for *Escherichia coli* and the blood pressure remained elevated, though the patient experienced much less headache and less visual disturbance, and cardiac symptoms were less marked.

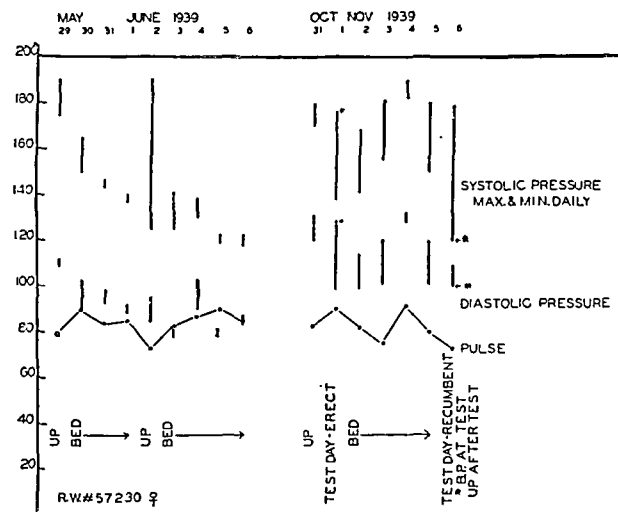


Fig. 4 (case 2).—Daily observations of the maximal and minimal systolic and diastolic blood pressure.

In view of the failure of nephropexy to give relief of the hypertension, patient 5 is to be observed again for review of the urologic condition for the purpose of determining whether a right nephrectomy is advisable. The decision will depend on the relative function of the two kidneys and on a determination as to whether or not the left kidney is also the seat of a chronic pyelonephritis.

COMMENT

In table 1 are recorded the observations on five patients with nephroptosis, and in table 2 those on five controls with normal blood pressure and on two patients

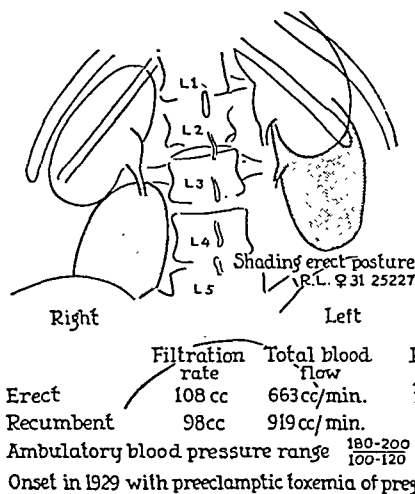


Fig. 5 (case 3).—Tracings of the superimposed renal shadows in roentgenograms, with the total blood flow, glomerular filtration and blood pressure in the erect and in the recumbent posture.

with hypertension. In none of the control cases was there an appreciable degree of nephroptosis.

When the two groups are compared it is readily apparent that change of posture produced significant effects on the renal blood flow and blood pressure of those who had nephroptosis as against those who had

not. Among the patients with nephroptosis (table 1), in each instance the blood pressure was higher in the erect posture. Among the controls only one person (M. D.) showed an increase of 21 mm. in systolic pressure and a decrease of 5 mm. in diastolic pressure on assuming the erect posture. The remaining controls showed insignificant change in systolic pressure, though F. H., a hypertensive patient, had a rise of 20 mm. in diastolic pressure when erect. We shall refer hereafter to the elevation of blood pressure in the erect posture observed in patients with nephroptosis as an "orthostatic hypertension."

Among these patients (table 1) it was observed that the total renal blood flow, as measured by means of the plasma diodrast clearance and the hematocrit, was in

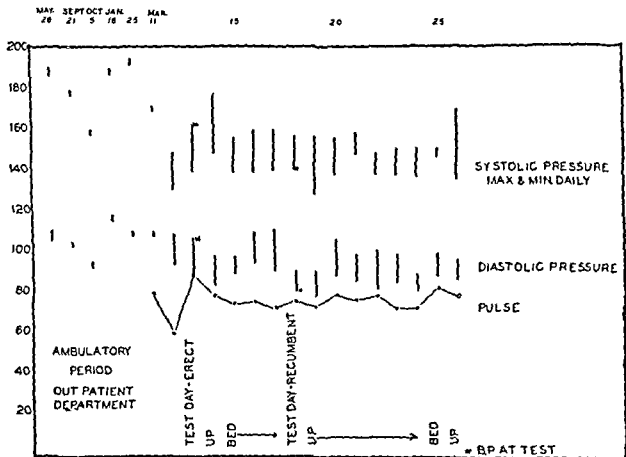


Fig. 6 (case 3).—Day to day variations in the blood pressure as affected by posture and activity.

each instance less in the erect than in the recumbent posture, the decrease ranging from 20.5 to 43.5 per cent of the recumbent flow. Goldblatt has observed that slight degrees of partial renal ischemia are capable of

in contrast to a rather striking constancy in the control observations. The "filtration fraction" represents the ratio of the glomerular filtration (inulin clearance) to the total plasma flow (diodrast clearance). Homer

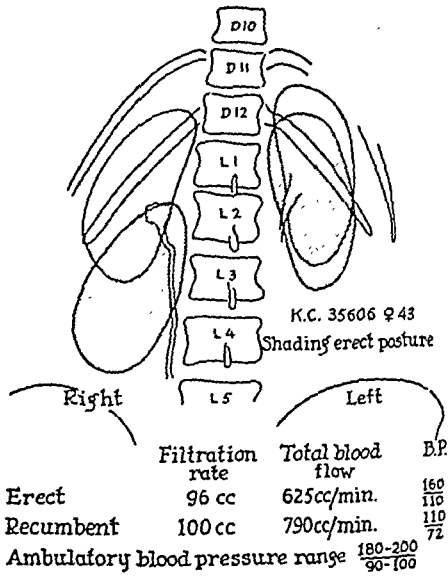


Fig. 7 (case 4).—Tracings of the kidney shadows superimposed after intravenous pyelography, with a comparison of the total blood flow, glomerular filtration rate and blood pressure in the erect and with those in the recumbent posture.

Smith⁷ has shown that the vasomotor activity within the kidney is such that constriction and dilatation of the efferent glomerular arteriole provides the usual control of renal blood flow except when the cardiac output is markedly influenced by extrarenal factors. Smith has good reason to believe that constriction of the vasa efferentia increases the pressure in the glomeruli and in this manner maintains the rate of glomerular filtration nearly constant while diminishing the volume of

TABLE 2.—Control Series of Patients with Normal Pressure and Hypertension without Nephroptosis

Patient.....	Controls					Hypertension Without Nephroptosis	
	J. L.	I. P.	M. D.	R. M.	E. L.	F. H.	S. W.
Age.....	30	33	19	20	18	67	33
Sex.....	♂	♂	♀	♀	♀	♀	♀
Blood pressure							
Erect.....	112/70	110/78	105/63	88/58	110/60	186/110	150/100
Recumbent.....	113/74	112/76	84/68	90/58	110/70	190/ 90	112/ 94
Glomerular filtration, cc./min.							
Erect.....	151	155	136	109	143	80	121
Recumbent.....	159	135	130	113	136	98	101
Total blood flow, cc./min.							
Erect.....	1,256	1,175	1,035	1,046	1,044	610	823
Recumbent.....	1,323	1,027	1,119	1,142	1,202	694	698
Ratio: Diodrast iodine/inulin							
Erect.....	4.65	4.24	4.79	6.33	4.60	4.50	4.21
Recumbent.....	4.66	4.26	5.42	6.37	5.57	4.32	5.51
Filtration fraction, per cent							
Erect.....	21.5	23.5	20.9	16.5	21.7	22.2	23.7
Recumbent.....	21.4	23.5	18.4	15.7	18.0	23.2	18.1
Hematocrit.....	44	44	37	37	37	41	38

Min. = minute.

exciting the pressor mechanism by which blood pressure is elevated. It is not unreasonable, therefore, to attribute the instances of orthostatic hypertension which we have observed to the diminished blood flow through the kidneys in the erect posture.

Significant changes were also observed in the "filtration fraction," which was increased in each instance of orthostatic hypertension in the erect posture (table 1),

plasma flowing through them. In this way a diminished blood flow is compensated by the filtration of a greater fraction of the plasma into Bowman's capsule. The clearance ratio of diodrast to inulin in all cases (table 1) increased in the change from the erect to the recumbent posture.

The effect of the pressor substance "renin" on the intrinsic circulation of the kidney has been studied by

Merrill, Williams and Harrison.⁸ When renin elevated the blood pressure of an experimental animal the kidney was observed to swell, its blood flow diminished and its output of urine increased. These observations are in consonance with those of Smith and point to a constriction of the vasa efferentia.

In the light of these facts, one may postulate the following events in cases of nephroptosis exhibiting orthostatic hypertension: 1. The erect posture causes some slight interference with the afferent blood supply in consequence of which renin is produced. 2. The action of renin results in constriction of the vasa efferentia in both kidneys with the result that the total renal blood flow is still further decreased, while at the same time the glomerular filtration remains relatively constant, owing to the compensatory effect of increased intraglomerular pressure.

It should be stated that nephroptosis does not always result in hypertension. The cases reported here were selected because of the association of hypertension with ptosis of the kidneys. We have as yet no basis for estimating the frequency with which this factor operates to produce an orthostatic elevation of the pressure.

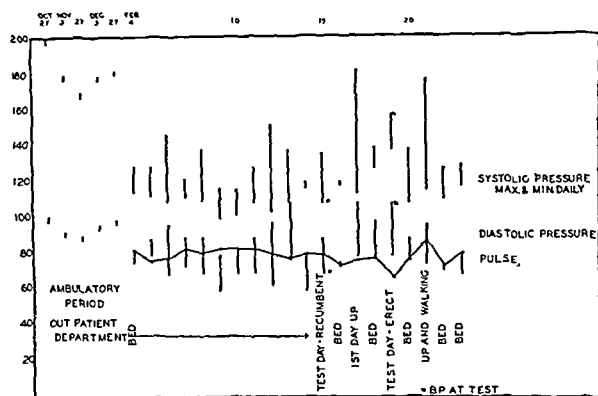


Fig. 8 (case 4).—Day to day variations in the blood pressure as affected by posture and activity.

It is worth while to remember that hypertension is much more frequent among women than among men and that nephroptosis is very common among women.

The therapeutic efforts applied in our cases have not yielded very striking results. In case 1 hypertension was not relieved by nephropexy. Its persistence may have been due to ligation of an aberrant vessel, thus creating a new factor of renal ischemia. Extirpation of the kidney in this case might possibly have relieved the hypertension, though it is probable that there was considerable sclerosis of the arteries of the other kidney, which might have caused failure in any case.

In cases 1 and 5, in which hypertension persisted, there was nevertheless considerable relief of symptoms following nephropexy, as was also true in case 3, in which a ptosis belt was worn. The support given to the kidneys seems to have prevented the critical orthostatic exacerbations of blood pressure and attendant cerebral, ocular and cardiac symptoms.

In view of these observations it would appear to be desirable to ascertain the effect of posture on the blood pressure of all hypertensive patients. Those in whom the pressure falls markedly when confined strictly to the

recumbent posture deserve urologic study and some sort of support to the kidneys if ptosis is found. An important point to be stressed in testing for the effect of posture is that recumbency must be maintained through-

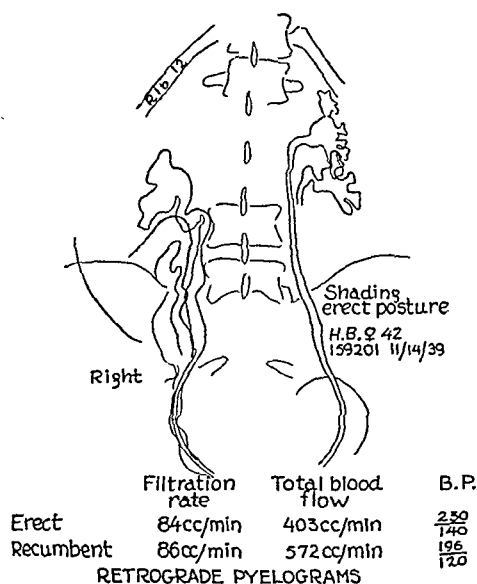


Fig. 9 (case 5).—Superimposed tracings of the retrograde pyelograms showing evidence of ptosis and chronic pyelonephritis of the right kidney and to a lesser degree of the left. Comparisons are made of the total blood flow, glomerular filtration and blood pressure in the erect and with those in the recumbent posture.

out the test. The patient should not get up out of bed or even sit up while the test is in progress, since these changes may excite the pressor activity with results lasting for several hours.

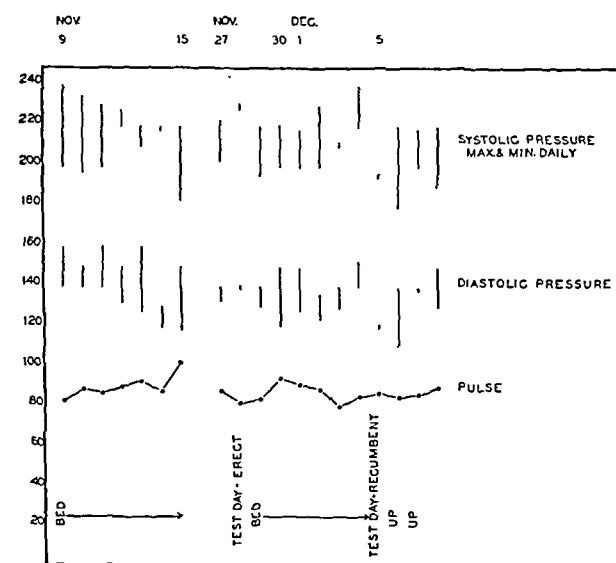


Fig. 10. (case 5).—Day to day observations of the blood pressure.

CONCLUSIONS

1. In some instances of nephroptosis the erect posture may result in orthostatic elevation of the blood pressure, with diminution of the total renal blood flow and with relative constancy of glomerular filtration, though the "filtration fraction" is increased. The clearance ratio of diodrast to inulin is decreased in the erect as compared with that in the recumbent posture.

8. Merrill, Arthur; Williams, R. H., and Harrison, T. R.: The Effects of a Pressor Substance Obtained from the Kidneys on the Renal Circulation of Rats and Dogs, *Am. J. M. Sc.* 196:240 (Aug.) 1938.

2. Patients with normal blood pressure and those with hypertension but without nephroptosis did not exhibit these changes.

3. Hypertensive patients should be studied with regard to the effect of posture on the blood pressure by comparing the pressure during ordinary activity with that found after a period of strict recumbency. Those in whom a marked orthostatic effect is demonstrated should receive pyelographic study and treatment by appropriate support of the kidneys which are ptosed. Cerebral, ocular and cardiac symptoms may be relieved by the stabilization of blood pressure which results from such measures.

260 Crittenden Boulevard.

SYPHILIS OF THE STOMACH

CARRINGTON WILLIAMS, M.D.

AND

PAUL KIMMELSTIEL, M.D.

RICHMOND, VA.

In past years eight cases of syphilis of the stomach and two cases of syphilis of the colon have been reported from this clinic (LaRoque,¹ Pusch,² Williams³). We feel perfectly confident of the diagnosis of these cases and feel that they present the classic picture of advanced syphilitic involvement. We find, however, that there is wide divergence of opinion, from the view that the lesion is actually not syphilitic in nature to that of reporting nonspecific ulcers in a syphilitic individual as examples of this disease. The occurrence of another typical case prompts us to review our former experience and to present the subject particularly from the standpoint of diagnosis, microscopic appearance of the lesion, and treatment.

In the first place we would emphasize the point that the lesion which we are discussing is an infiltrating one which involves varying amounts of the stomach and is located primarily in the submucosa. From this location varying amounts of mucosa and muscularis are involved and ulceration is secondary and, therefore, usually shallow. In all of our cases the location has been in the pylorus. Pusch⁴ states that in 86 per cent of a group of thirty-five cases selected by him from the literature on the basis of authenticity the lesion was located in the pylorus. This is important from the standpoint both of diagnosis and of treatment. The next most frequent location is the midstomach, where an hour glass deformity is produced (Mayer⁵). When the disease has existed for a long time the entire organ may be involved, producing a leather bottle deformity (Cabot Case Records⁶). This gradual infiltration into a large part or all of the stomach is an important one to have in mind when deciding the method of treatment.

It must be admitted that the diagnosis can positively be made only after long continued successful anti-

syphilitic therapy or by the gross appearance and microscopic picture of removed tissue.

These patients usually present themselves with history of a severe stomach disorder often typical of cancer. Pain, weight loss and vomiting are prominent symptoms. Physical examination may reveal nothing specific but occasionally an epigastric mass is found and not infrequently other stigmas of syphilis are present. The Wassermann reaction is almost always positive. Gastric analysis usually reveals achlorhydria. There is often secondary anemia, and occasionally massive hemorrhages result in profound acute anemia (LaRoque¹). Gastroscopic examination has apparently been done in few cases. Carey and Ylvisaker⁷ report a case in which the stomach was markedly contracted and the mucous membrane pale.

As in all stomach lesions the x-ray appearance is the most important diagnostic sign. Most authors say that this appearance is indistinguishable from cancer. Downes and Lewald⁸ in 1915 suggested certain typical appearances in syphilis as contrasted with cancer. One of us⁹ emphasized the smooth tubelike or funnel deformity as characteristic of syphilis. Obviously one cannot be certain of the diagnosis on the basis of the clinical picture and x-ray appearances, but they are highly suggestive.

The gross appearance of the lesion has been well described by Meyer and Singer,¹⁰ who have had an unusually large experience with this disease. They emphasize the fact that the gross appearance of the lesion is much less extensive than the x-ray appearance. In cancer the opposite is usually found. In early cases the stomach is pliable where x-ray examination showed a gross deformity. Later it has a tough but smooth feel. There may be edema. The lymph glands are often involved; they are usually soft and may be gray or pink.

On cross section of the wall the submucosa mainly is involved in the process of infiltration, although the muscularis likewise appears thicker than normal. The mucosa covering the involved area is dull and smooth; it may show small shallow ulcers or the whole may have ulcerated from the involved portion in an annular fashion.

The microscopic appearances are so important in establishing a diagnosis of syphilis of the stomach that we will give them in some detail and discuss other opinions from the literature.

Histologic sections reveal a more or less diffuse infiltration of the entire wall with a variety of round cells, predominatingly lymphocytes and plasma cells. The infiltration is most marked in the submucosa but penetrates within the intermuscular connective tissue, the muscularis proper, and appears in the serosal tissues. A conspicuous perivascular arrangement of this inflammatory infiltration is noticeable. In some cases true gummas or small gummatoïd nodules are seen composed of epithelioid cells with occasional multinucleated giant cells. Vascular lesions are described as an outstanding characteristic feature. Proliferating endarteritis is most commonly found and frequently referred to as one of the outstanding histologic criteria. Less frequently noticed, but in our opinion of more

From the Departments of Surgery and Pathology, Medical College of Virginia.

Read before the Section on Surgery, General and Abdominal, at the Ninety-First Annual Session of the American Medical Association, New York, June 13, 1940.

1. LaRoque, G. P.: Benign Tumors of the Stomach, *Ann. Surg.* **96**: 240 (Aug.) 1932.

2. Pusch, L. C.: Ulcerative Syphilitic Lesions of the Stomach, *Virginia M. Monthly* **60**: 227 (July) 1933.

3. Williams (footnotes 23 and 9).

4. Pusch, L. C.: Syphilis of the Stomach, *Internat. Clin.* **1**: 56 (March) 1935.

5. Mayer, H. J.: Syphilis of the Stomach, *Am. J. Digest. Dis. & Nutrition* **4**: 503 (Oct.) 1937.

6. Cabot Case Records: Case of Syphilis of the Stomach, *New England J. Med.* **212**: 839 (May 2) 1935.

7. Carey, J. B., and Ylvisaker, R. S.: Gastroscopic Observations of Syphilis of the Stomach, *Ann. Int. Med.* **12**: 544 (Oct.) 1938.

8. Downes, W. A., and Lewald, L. T.: Syphilis of the Stomach, *J. A. M. A.* **94**: 1824 (May 29) 1915.

9. Williams, Carrington: The Diagnosis of Syphilis of the Gastrointestinal Tract, *Virginia M. Monthly* **62**: 325 (Sept.) 1935.

10. Meyer, K. A., and Singer, H. A.: Syphilis of the Stomach, *Arch. Surg.* **26**: 443 (March) 1933.

value in regard to the differential diagnosis, is the panphlebitis. This lesion is more often found than endarteritis but can be detected only with special stains for elastic fibers. The mucosal ulcer is nonspecific in appearance. At its floor, which is composed of dense granulation tissue undergoing necrobiosis, vascular lesions are particularly prominent. Endarteritis of large arteries and necrosis with thrombotic occlusion of small vessels are often encountered. These vascular lesions, however, are of the same nature as found in nonspecific peptic gastric ulcers.

None of the aforementioned criteria alone are pathognomonic, but in connection with the clinical and serologic data they may be used as collective evidence.

Reviewing the literature on this subject, it occurred to us that the phlebitis, as one of the outstanding criteria in aid for differential diagnosis, has not found the attention it deserves. Only a few authors mention its occurrence. The first to describe this lesion was E. Fraenkel¹¹ in 1898. It is furthermore described by Kwartin and Heyd,¹² Konjetzny¹³ and Singer.¹⁴ This author in two papers stresses the significance of panphlebitis, pointing out that the veins in comparison to the arteries bear the brunt of injury and also warns that a special stain for elastic fibers is necessary to demonstrate the lesion.

It is apparently for this reason that the severe involvement of veins has been so often overlooked. In such cases in which definite absence of endophlebitis was reported (McNee¹⁵) there is no mention of elastic tissue stain being applied.

The type of phlebitis referred to in this connection in reality is not a primary manifestation of syphilis in the vascular system but is invariably secondary in nature. As such, however, it is indicative of the destructive character of the syphilitic granulation tissue in which it is involved. Diffuse syphilitic granulation tissue, which is known to spread in perivascular lymph spaces, penetrates the adventitia and the medial coat of the veins, destroys its connective tissue and muscle fibers, splits up the more resistant elastic fibers and finally enters the lumen, which it may completely obliterate. It is obvious that in the late stages the original structure of the venous wall cannot be recognized in regular hematoxylin and eosin stained sections, though elastic tissue stain will demonstrate its outline. It is often noticeable and indeed striking to find the completely destroyed veins next to entirely intact arteries.

We refer to this type of panphlebitis as periendophlebitis, indicating the direction of progress of the granulation tissue penetrating the wall of veins from outside in, thus distinguishing it from other types of phlebitis primarily beginning in the vascular coats proper. A distinction should be made between the obliteration of the venous lumen by penetrating granulation tissue and an occlusion due to proliferation of endothelial and subendothelial elements which may be encountered in such segments of the vein in which the adventitia is involved in perivenous inflammatory granu-

lation. The latter type of endophlebitis does not bear specific significance. It is not easy to state just how much weight the demonstration of true periendophlebitis carries as a morphologic criterion for the diagnosis of syphilis. However, we have found it to be exceedingly helpful in establishing the specific etiology of granulation tissue. It is found to be far more indicative than, for instance, the predominatingly perivascular arrangement of lymphocytic and plasma cellular infiltration. Proliferating endophlebitis alone is likewise considered to be nonspecific and we agree with Konjetzny¹³ that it is frequently found in simple peptic ulcers of the stomach.

Destruction of veins in syphilitic granulation tissue is found in all three phases of syphilis and in all organs (Benda¹⁶). In tertiary syphilis, however, it seems to occur with particular frequency in the gastrointestinal tract (Fahr,¹⁷ Rieder,¹⁸ Fraenkel,¹¹ Gatewood¹⁹).

We have found periendophlebitis in all the specimens diagnosed as syphilis of the gastrointestinal tract examined in our laboratory. Wohlwill²⁰ considers this lesion an important aid in differential diagnosis of

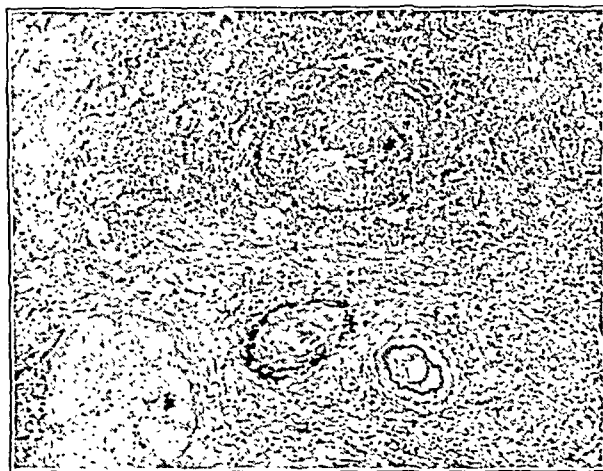


Fig. 1.—Low power field showing one artery with intact wall and some endarteritis. Next to it, medium sized vein with intact wall and endophlebitis. A larger vein, the wall and lumen of which are diffusely infiltrated by granulation tissue, the elastic lamellae being partially destroyed. Elastic tissue stain.

syphilis of the kidney. We have seen it without and in conjunction with gumma formation in every organ (testis, kidney, thyroid, heart) but we were unable to demonstrate it satisfactorily in four cases of syphilis of the lung (figs. 1 and 2).

Periendophlebitis, though indicative of syphilitic granulation tissue, is not pathognomonic. It is occasionally noticed in other types of specific infiltrating granulation tissues (particularly venereal lymphogranuloma). If this venous lesion is taken merely as a manifestation of an extraordinarily destructive nature of a chronic granulation tissue, it is a valuable participant in the collective evidence for the diagnosis of syphilis.

Finally the diagnosis was definitely proved by Harris and Morgan,²¹ who produced a chancre of the testicle in

11. Fraenkel, E.: Zur Lehre von der akquirierten Magen- und Darm-syphilis, Virchows Arch. f. path. Anat. 155, 1899.

12. Kwartin, Boris, and Heyd, C. G.: Syphilitic Ulcerations of the Stomach, Arch. Surg. 14: 566 (Feb.) 1927.

13. Konjetzny, G. E.: Gummose Magensyphilis, in Henke-Lubarsch Handbuch der speziellen pathologischen Anatomie und Histologie 4: 2, 1903.

14. Singer, H. A., and Dyas, F. G.: Syphilis of the Stomach with Special Reference to Certain Diagnostic Criteria, Arch. Int. Med. 42: 718 (Nov.) 1928. Meyer and Singer.¹⁵

15. McNee, J. W.: Syphilis of the Stomach, Quart. J. Med. 15: 215 (April) 1922.

16. Benda, C., in Henke-Lubarsch: Der speziellen pathologischen Anatomie und Histologie 2: 866-886.

17. Fahr, T.: Pathologische Anatomie 2, 1936 (L. Aschoff).

18. Rieder, cited by Fahr.¹⁷

19. Gatewood, W. E., and Kolodny, Anatole: Gastric and Intestinal Syphilis, Am. J. Syph. 7: 648 (Oct.) 1923.

20. Wohlwill, F.: Pathologisch-anatomische Untersuchungen über die Syphilis des uropoetischen Systems, Ztschr. f. urol. Chir. 22: 1, 1927.

21. Harris, S. J., and Morgan, H. J.: The Isolation of Spirochaeta Pallida from the Lesion of Gastric Syphilis, J. A. M. A. 90: 1405 (Oct. 22) 1932.

of them are known to have remained well, one is said to have died from gastric hemorrhage, and two have been lost.

CONCLUSION

1. The syphilitic origin of this lesion has been adequately proved by gross and microscopic study of removed tissue and the recovery of *Spirochaeta pallida* from a patient by Harris and Morgan.

2. It is a clinical entity and the result of infiltration of the submucosa in the third stage of syphilis and should not be confused with a penetrating ulcer in a syphilitic individual.

3. The diagnosis cannot be positively made before operation except by long successful antisymphilitic treatment. It should be strongly suspected, however, when a comparatively young individual is found by x-ray examination to have a smooth funnel or tubelike deformity of the stomach and other stigmas of syphilis. The diagnosis is confirmed by microscopic examination and we emphasize the constant presence of periendophlebitis, which often destroys all of the vein wall except the elastic tissue.

4. Medical treatment is indicated in early cases but the disease is usually not discovered until the lesion is extensive and complications such as hemorrhage and pyloric obstruction have occurred; then resection of the involved portion of the stomach is the treatment of choice.

816 West Franklin Street.

ABSTRACT OF DISCUSSION

DR. KARL A. MEYER, Chicago: The paper of Drs. Williams and Kimmelstiel is timely because of the apparent increased incidence of syphilis of the stomach. Since no cases of syphilis of the colon have been encountered in our clinic, I will restrict my discussion to gastric syphilis. It has been my good fortune to see quite a number of these cases. I agree with the authors in regard to the site of the syphilitic lesion. In the majority of our cases the involvement was in the pylorus. In only two cases was the pars media involved and in two others the entire stomach was affected, presenting the picture of a linitis plastica. The authors have rightly stressed pain, vomiting and loss of weight as the outstanding symptoms of gastric syphilis if occurring in a young individual with a positive serologic reaction. Notwithstanding the severe vomiting these patients rarely complain of nausea, since the emesis is merely a manifestation of decreased stomach capacity. It is this gradual decrease in the gastric capacity in an apparently otherwise normal individual which leads to sitophobia, severe vomiting and marked emaciation. In our series epigastric masses were palpable in only about 12 per cent of the cases. Achlorhydria was present in all of them. Other stigmas of syphilis were not especially important. In most of our cases a moderate secondary anemia was present, but we have not encountered any severe bleeding, such as hematemesis or tarry stools. Indeed, from our experience and from reports in the literature, profuse gastric hemorrhage seems to be an exceptionally rare symptom in syphilis of the stomach. Our experience with gastroscopy in syphilis of the stomach is too limited to justify any conclusions. The authors correctly stressed the difficulty in diagnosing gastric syphilis clinically. I believe that if a patient is below the carcinoma age, has a positive Wassermann reaction, has the triad of pain, vomiting and loss of weight, and x-ray appearances of extensive pathologic change in the stomach not corresponding to his general condition, he should be classed as having gastric syphilis until the condition has been proved otherwise. The roentgenogram cannot and should not be a deciding factor in the diagnosis of this condition. The therapeutic test is of definite diagnostic value and should be attempted in all cases in which surgical intervention is not urgent. We were often able to diagnose gastric syphilis at operation when we encountered a stomach

with a rather thick, boggy, hyperemic wall which was quite pliable in areas where marked infiltration should have been present according to the x-ray appearance. This is in contrast to gastric carcinoma, in which the conditions found at operation are more extensive than the x-ray examination would lead one to believe. In gastric syphilis we rarely found perigastric adhesions, and the neighboring lymph glands were usually soft and only slightly enlarged.

TECHNIC AND RESULTS IN PERINEAL PROSTATECTOMY

EDWIN DAVIS, M.D.

OMAHA

The . . . pursuit of an unattainable perfection . . . is what alone gives a meaning to our lives. . . .

—Logan Pearsall Smith.

Whether perfection is attainable in any field of human endeavor is perhaps debatable. There is no question, however, that the foregoing dictum is peculiarly appropriate as applied to surgery. Were proof of surgical imperfection necessary, the following text would suffice—as would any set of surgical statistics, honestly compiled. The elusiveness of perfection, however, is no contraindication to a persistent quest for near perfection or to an attempt to approach the ultimate goal, which, in any surgical field, is the attainment of excellence and permanence of functional results, with minimum hazard.

It is my purpose to refer briefly to certain factors tending to improve the technic of perineal prostatectomy and to present a tabulation of late functional results, based on an analysis of questionnaire replies received from 100 consecutive patients.

TECHNIC

In that Young's¹ classic description of the fundamental principles of the technic of perineal prostatectomy is readily available and is not to be duplicated (much less to be improved on), a detailed discussion of technic would here be purposeless. This subject may therefore be disposed of with brief reference to certain factors such as sacral block anesthesia,² wound antisepsis,³ hemostasis and plastic closure, which tend to eliminate postoperative complications and to minimize the mortality rate. The indispensability of preliminary drainage is too well recognized to require discussion.

Few realize that perineal prostatectomy need not be performed as a blind enucleation through a hemorrhagic field, as ordinarily supposed, but may be made a procedure permitting complete visualization throughout, with resulting precision of manipulation. After anatomic exposure without injury to the rectal wall or external sphincter, and after enucleation of the hypertrophied lobes through an inverted V incision in the posterior prostatic capsule, the perineal hemostatic drainage bag,⁴ introduced into the bladder through the urethra, then serves as a tractor to bring the bladder

Read before the Section on Urology at the Ninety-First Annual Session of the American Medical Association, New York, June 13, 1940.

1. Young, H. H., and Davis, D. M.: *Practice of Urology*, Philadelphia, W. B. Saunders Company, 1926, vol. 2.

2. Davis, Edwin: Perineal Prostatectomy with Particular Reference to Sacral Anesthesia and to Hemostasis, *J. A. M. A.* 52: 1988-1993 (Dec. 20) 1924.

3. Davis, Edwin: Factors Tending to Minimize the Prostatectomy Hazard, with Particular Reference to Wound Antisepsis, *Tr. Am. A. G.-U. Surgeons*, 1938, pp. 383-392.

4. Davis, Edwin: Distensible Bag for Hemostasis and Drainage Following Perineal Prostatectomy, *J. Urol.* 15: 201-210 (Aug.) 1927.

"neck" and the tissues of the floor of the bladder into view. The several arterial spurters usually present, having been thus visualized and made accessible, may then easily be controlled precisely and accurately by suture ligation. Continuing to use the bag as a tractor, and with a urethral catheter in place, it is then possible to carry out plastic closure of the tissues of the prostatic capsule and bladder neck and floor in such a manner as to control venous ooze and obliterate dead space, yet leaving a gap through which the collapsed bag may be slipped out after a forty-eight hour interval. It is important to note that the temporary presence of the hemostatic bag does not retard wound healing, in that the average period for cessation of perineal urinary drainage has been reduced from twenty-one to sixteen and a half days since the adoption of a new technic including the introduction of a urethral catheter at operation. This figure, although based on only the last thirty cases, compares favorably with the average period of wound closure reported by Hinman⁵ following plastic closure with a urethral catheter in position but no hemostatic bag. With the employment of this technic, and by strict adherence to the principles of preliminary drainage, it has been possible to maintain a 2.7 per cent mortality rate in a perineal prostatectomy series now totaling 831 consecutive cases, all under sacral block anesthesia.

RESULTS

Second in importance only to mortality rate and from some points of view of even greater importance than mortality rate, is the matter of late functional results, in that the interest of most of those in the late twilight of life lies primarily in comfort. Hence the futility of saving a life not worth living (from the point of view of the patient himself) by reason of continued suffering. This opinion, although not universally held, is shared by many patients, relatives and surgeons alike.

With respect to prostatic surgery it may be stated that results may be best evaluated by the degree of postoperative urinary frequency, both by day and by night, and more particularly by the patient's own opinion as to whether he has or has not obtained complete symptomatic relief. The patient who passes urine at normal intervals without discomfort, and who reports himself as being wholly satisfied, may conservatively be classed as cured. The following simple questionnaire was worded with these criteria in mind:

1. Is the wound entirely healed?
2. Can you control the urine?
3. Do you pass urine too often?
4. How many times do you get up at night to urinate?
5. Does the urine pass without difficulty?
6. As far as the operation is concerned, do you consider yourself (1) well, (2) improved or (3) unimproved?

It is to be recognized that complete satisfaction in all cases is not to be expected, in that prostatic surgery is often (if not usually) performed after months or years of urinary tract obstruction and infection, and in the presence of coexisting old age lesions. Restoration to normal with complete disappearance of symptoms is therefore impossible in many instances, even though the purpose of the operation in relieving mechanical urinary tract obstruction has been accomplished. The tabulation here presented, showing results of analysis of 100 consecutive questionnaire replies, requires but little discussion or explanation.

The postoperative incontinence hazard is to be reckoned with following the removal of prostatic obstruction by any of the three recognized methods. Those with experience know that a careful and honest analysis of a large suprapubic prostatectomy series will show a small percentage of patients defective in this respect. Although no one denies the danger of damage to the external sphincter inherent in perineal prostatectomy, the occurrence of this complication following suprapubic prostatectomy indicates that the occasional case of unsatisfactory urinary control may result from weakness of the fibers of the external sphincter, inherent in the individual, or possibly from a coexisting central nervous system lesion. In that this comparatively small follow-up series, consisting of only 100 replies, happened to include two cases of real incontinence (one complete and one partial), percentage figures based only on this small group would have been misleading. For

Late Functional Results

	Prostatectomy
Total number of consecutive cases.....	100
Average age.....	65.5
Above 70.....	47
Above 80.....	8
Wound closure (average)*.....	16.5 days
Postoperative hospitalization (average).....	21 days
Amount of tissue removed (average).....	56 grams
Time elapsed since operation.....	1 to 4 years
Incontinence	Per Cent
Based on 353 replies	
Complete.....	1 0.3
Partial but definite.....	3 0.9
Slight or doubtful.....	8 2.2
Fistula (requiring closure).....	2
Urination too frequent (patient's own opinion).....	15
Difficulty with urination.....	2
Nocturia	
Not at all.....	20
Once.....	41
From two to four.....	33
More than four.....	6
Result (patient's own opinion)	
Well.....	89
Improved.....	10
Unimproved.....	1

* Excluding the two fistula cases requiring closure.

this reason a larger but similar questionnaire series previously reported⁶ has been added to the small group, bringing the total up to 353 replies and thus presenting a more accurate cross section. The totally incontinent patient included in the small group reported that he "passes urine all the time involuntarily," while those classed as partially incontinent have "some control." Those slightly incontinent or doubtful made such comments as "not full control when I cough or sneeze," "control fair" and "not entirely." Since the majority of the patients tabulated as slightly incontinent have voluntarily classified themselves as "well," it is evident that this defect is not the source of a great deal of annoyance.

By reason of persistent slight perineal urinary drainage, two of these patients (2 per cent) required secondary closure. In fact, this 2 per cent figure for perineal fistula has been constant throughout the entire series totaling more than 800 cases, although this complication has been conspicuously absent since the institution of retention catheter drainage and plastic closure. Fifteen

5. Hinman, Frank: The Modern Operation of Plastic Perineal Prostatectomy, *Tr. Am. A. G.-U. Surgeons* 30: 265, 1937.

6. Davis, Edwin: Analysis of Results in 378 Consecutive Cases of Perineal Prostatectomy, *Tr. Am. A. G.-U. Surgeons*, 1931, pp. 387-399.

out of a hundred patients reported urination too frequent, while two complained of difficulty with urination. Nocturia only once or not at all was reported by 61 per cent of these old men, while 89 per cent voluntarily classified themselves as well.

In that a similar questionnaire series, previously reported,⁶ yielded only 82 per cent well, a continued quest for near perfection would seem to be justified. The same applies to all fields of surgical endeavor.

1436 Medical Arts Building.

ABSTRACT OF DISCUSSION

DR. OSWALD SWINNEY LOWSLEY, New York: Operative surgery on the prostate is not a thing of the past. I congratulate Dr. Davis on his operation, which for the conservative operation is one of the best. All of these operations are modifications of Dr. Young's original perineal prostatectomy. It encourages every one doing scientific work to do it well, because here is an operation that has lived a very active life for a long time. While Davis and myself and others have made modifications, we cannot get away from the original principles which he laid down. We approach the prostate operation a little differently. We take the entire prostate out, cut the apex of the prostate away from the external membranous urethra and then dissect it free, being careful to preserve the plexus of Santorini. After having removed the prostate we insert ribbon gut into the wall of the urethra and the neck of the bladder in the form of a mattress suture, and when we draw it up we have the entire prostate removed, the neck of the bladder plicated, the urethra plicated and no packing is necessary, nor a bag nor any other hemostatic aid, because we also believe that hemostasis should be performed on the operating table. Sometimes we don't find it necessary to remove the seminal vesicles. We merely cut them across and leave them. The operation should not be done in the case of any man who has not completed his sexual life, because a patient cannot ejaculate after this operation is done. That matter has to be discussed with the patient before the operation is done, because to some patients it seems to be an important matter. This operation has a great number of advantages. The conservative perineal prostatectomy leaves a cavity in which there is a great deal of slough and sometimes these people maintain a constant infection and a puddle of urine the rest of their lives. That is eliminated by the procedure which I have described. We have no incontinence with this operation, owing to the plication of the urethra and the plication of the bladder neck. We have no chance for such patients to develop cancer of the remaining posterior lobe.

DR. HUGH H. YOUNG, Baltimore: The motion picture which Mr. William P. Didusch has made for Dr. Edwin Davis is fine. The exposure of the prostate, after division of the recto-urethralis muscle, demonstrates clearly how simple and safe this procedure is. Done in this way the membranous urethra is avoided, and there is no danger of incontinence or rectal injury. The inverted V capsular incision, the complete enucleation of the prostate in one piece with the assistance of his distensible bag, is beautifully shown. Dr. Davis also uses the bag very effectively in placing the sutures to draw the vesical neck down to cover the space from which the hypertrophied lobes have been removed. The technic which he has employed is similar to that which my associates and I have used very effectively. The situation at the end of the procedure with the operative wound covered by normal mucosa is in marked contrast to the condition left after transurethral resection in very big prostates. In the latter, a great raw area, much of which has been injured by fulguration, is left to heal by granulation. Every man who pretends to do high class surgical urology should master the perineal route, through which alone early cases of carcinoma of the prostate can be cured and tuberculosis of the seminal vesicles and prostate eradicated. There are many other conditions which can be treated alone by perineal surgery. These motion pictures of Dr. Davis and Dr. Belt and others which Mr. Didusch has made should go a long way to arouse interest in perineal surgery, which has been badly neglected by many.

ASPIRATION BRONCHOPNEUMONIA

WITH SPECIAL REFERENCE TO ASPIRATION
OF STOMACH CONTENT

ERNEST E. IRONS, M.D.

AND

CARL WESLEY APFELBACH, M.D.

CHICAGO

The pulmonary diseases most commonly recognized as being associated with the bronchial aspiration of material from the alimentary tract are suppuration and gangrene such as are observed in carcinoma of the esophagus or the aspiration of foreign bodies. A much more frequent pulmonary disease, aspiration bronchopneumonia, the pathogenesis of which seems not to be generally recognized, is also related to the aspiration of material from the alimentary tract, usually material from a dilated stomach. This form of aspiration bronchopneumonia is characterized by hemorrhage, hyperemia, edema and advanced postmortem and retrogressive changes in the lungs.

Bronchopneumonia of the type usually believed to have its origin in the upper respiratory tract is considered to be caused by organisms aspirated from the pharynx or inhaled from the air, which lodge in the smaller bronchi on tissues already damaged by previous disease such as influenza, measles or other infections or colds. The incidence and course of this common type of bronchopneumonia in a community or hospital is thus influenced by the presence of epidemics characterized by pulmonary infections and by the kind of organisms present in the upper respiratory tract of people in the community. In cases of aspiration bronchopneumonia, such a relationship is not demonstrable.

One of the earliest references to aspiration of stomach content as a cause of bronchopneumonia is the report of Ernst Becker¹ in 1887, who described this form of bronchopneumonia in relation to postoperative complications and to gastric diseases. Woillez² in France referred to the same condition, and Balfour and Gray,³ in discussing postoperative complications, called attention to the danger of aspiration of stomach content. Since then there have been repeated suggestions that such postoperative changes might be due to "shock" or again that the aspiration of pneumococci from the pharynx might produce a hemorrhagic type of exudate rather than a fibrinous type by reason of the supposed reduction of resistance of the patient.

The pulmonary complications to be discussed concern acute hyperemia, hemorrhagic and edematous alteration in lung tissue and acute tracheobronchitis. Anatomically these have been variously called "hyperemia and edema of the lungs," "hypostatic bronchopneumonia," "pneumonitis" and "postoperative bronchopneumonia." Clinically the symptoms and physical signs observed in these cases usually pass under the all inclusive diagnosis of bronchopneumonia and are most frequently seen in persons suffering from acute dilatation of the stomach,

From the departments of pathology and medicine, Presbyterian Hospital and Rush Medical College.

Read before the Section on Practice of Medicine at the Ninety-First Annual Session of the American Medical Association, New York, June 12, 1940.

1. Becker, Ernst: Beiträge zur Geschichte der Aspirations pneumonie (Göttingen), Helmsdt, J. C. Schmidt, 1887.

2. Woillez, E. J.: Traité clinique des maladies aiguës des organes respiratoires, Paris, A. Delahaye, 1872.

3. Balfour, D. C., and Gray, H. K.: Pulmonary Complications Following Operations on the Stomach and Duodenum, *Practitioner* 130:625 (June) 1933.

paralytic ileus, mechanical bowel obstruction or cerebral and other diseases associated with coma or loss of reflexes. The symptoms, severity of the course and speed of fatal outcome are determined by the amount of stomach content aspirated, by whether free hydrochloric acid is present or whether, in its absence, the aspirated material is rich in bacteria.

In a general hospital of the type of the Presbyterian Hospital of Chicago, the incidence of traumatic cases and contagious diseases is low. The average occurrence of aspiration pneumonia is found to be about 20 per cent of all deaths (necropsies). These figures are based on the postmortem interpretation of the characteristic criteria enumerated (table 1).

For the recognition of bronchopneumonia caused by the aspiration of material from the gastrointestinal tract, it is important that the necropsy be done within an hour or two after death. The bacteriologic examination of fresh tissues and the observation of postmortem alterations are more distinct and reliable than in cases in which several hours has elapsed before the necropsy and in which general postmortem changes throughout the body confuse the interpretation of alterations caused by the aspirated material.

The lungs are overdistended with air and do not collapse when the sternum is removed, owing to the presence of aspirated material and exudate in the bronchial tree and to the presence of hemorrhage and edema of much of the lung tissue.

The lungs are increased in weight in all cases except in those in which death occurs within a few minutes after the aspiration of material sufficient to produce asphyxiation. The increase in weight on the average is at least 200 or 300 Gm. for each lung and often may reach levels of 700 or 800 Gm. The increase in weight is due chiefly to hemorrhage and edema of the alveolar spaces. Intense hyperemia of the alveolar capillaries also contributes to the increase in weight. Usually the color of the blood in the alveolar spaces and alveolar capillaries is altered by the aspirated material, causing the blood in the lung to be much darker than that observed elsewhere in the body and the tissues to be stained by hemolyzed blood. This is important because in instances of pneumonia caused by the usual respiratory organisms hemolysis and postmortem change are not characteristic of the alterations in lung tissue. In cases in which there are no pulmonary complications, the lungs undergo postmortem change slowly, in contrast to the alterations in the abdominal organs. Thus, advanced changes in the lungs indicate that material has been introduced into them that can accelerate postmortem alterations.

When the bronchial tree is examined a prominent characteristic is intense hyperemia, usually of a much greater degree than that observed in pneumonia caused by the pneumococcus. If death has occurred soon after the aspiration, much of the material in the bronchial tree, even in the smaller bronchioles, has the gross characteristics of the material observed in the gastrointestinal tract.

The hemorrhagic and hyperemic regions are unevenly disseminated in the lung tissue in contrast to the evenness of distribution in passive hyperemia and edema which have resulted from cardiac disease. Acute erosions and acute esophagitis are frequent accompaniments even in patients who have not had a tube introduced into the stomach.

Associated complications that suggest the possibility of aspiration of gastrointestinal material are dilatation of the stomach and small bowel, mechanical bowel obstruction, acute generalized peritonitis, particularly if paralytic ileus is present, and diseases of the brain that have produced coma.

Another striking characteristic is disclosed by routine cultures of lung parenchyma, the bronchial tree, the stomach and blood from the right ventricle. In acute aspiration bronchopneumonia, the bacterial flora of the lung, bronchial tree and stomach are almost identical, and ordinarily the cultures of blood from the right side of the heart are sterile. Furthermore, in bronchopneumonia caused by the organisms usually found in respiratory infections, pure cultures of the causative bacterium are characteristic, whereas in cases of acute aspiration bronchopneumonia multiplicity of kinds of organisms is the rule, and the organisms are of the type commonly found in the gastrointestinal tract in the absence of free hydrochloric acid in the lumen of the stomach.

If material from a dilated stomach in which there is no free hydrochloric acid is introduced into the bronchial tree of a dog, the same types of hemorrhagic, hyperemic and edematous alterations in the lung are

TABLE 1.—*Acute Pulmonary Complications of 1938:
152 Necropsies (Adults)*

No significant pulmonary complications.....	36
Aspiration bronchopneumonia	36
Bronchopneumonia (pneumococci, streptococci, and so on) ..	20
Hyperemia and edema of the lungs.....	15
Hemorrhagic infarcts	14
Septic infarcts	6
Atelectasis (compression)	6
Embolism of the pulmonary artery.....	5
Bronchitis	5
Primary pulmonary disease (lobar pneumonia, bronchiogenic carcinoma, and so on).....	9

produced as are observed in persons in whom the pathologic changes interpreted as aspiration bronchopneumonia are found at necropsy.⁴

The characteristic microscopic changes are intense engorgement of the alveolar capillaries with erythrocytes, edema and hemorrhage into the alveolar spaces. Patients who have survived for at least several hours show some degree of polymorphonuclear leukocytic exudation. Another outstanding characteristic is the extensive desquamation of the lining of the bronchial tree with aspiration of the desquamated cells into the alveolar spaces. In lungs the site of other forms of pneumonia, removed from one to two hours after death and properly fixed, the bronchial mucosa is usually intact, whereas in cases of aspiration bronchopneumonia there is frequently extensive loss of bronchial mucosa. In the submucosa of the bronchial tree there is marked active hyperemia.

The tissues removed from the thorax have lost their capacity for distinct staining in contrast to tissues removed from other portions of the body, indicating a disproportionate degree of postmortem change in the lungs. The erythrocytes in the alveolar spaces, and often those in the capillaries, have lost a large amount of their hemoglobin so that they stain only as shadowy outlines. If a sufficient number of sections are made, particles of undigested food may be identified in the

4. Apfelbach, C. W., and Christianson, O. O.: Alterations in the Respiratory Tract from Aspirated Vomitus, *J. A. M. A.* 108: 503 (Feb. 6) 1931.

alveolar spaces near regions of hemorrhage and edema. Often large masses of bacteria are present in the altered regions and, among these, gram-positive bacilli are common.

The organisms most frequently found in the lung tissue, bronchial tree and stomach are colon bacilli,

TABLE 2.—Associated Pathologic Changes in 169 Instances of Bronchial Aspiration of Vomitus

	Frequency
Dilatation of the stomach.....	40
Ileus	34
Bowel obstruction	24
Peptic erosions of the stomach.....	23
Acute generalized peritonitis.....	21
Localized peritonitis	16
Petechial hemorrhages of the stomach.....	13

gram-positive anaerobic bacilli, diphtheroids, staphylococci, yeasts, streptococci and occasionally pneumococci.

The general custom in the performance of necropsies seems to be to omit the routine cultures described. It has generally been assumed that postmortem invasion of the body occurs quickly and that such bacteriologic examinations are not significant in the interpretation of disease processes in the body. It has been our experience that cultures made of tissues within one to two hours after death of persons who have died from non-infectious diseases are almost all sterile with the exception of those of the intestinal tract. If there are no gross alterations in the lung tissue, cultures reveal few or no organisms. In cases of lobar pneumonia, pneumococci are present in abundance, usually in pure culture. It is significant that, in bodies in which the alterations described were found, cultures revealed large numbers of bacteria in the lung tissue and none in the blood stream. This indicates that the organisms were introduced into the lung by way of the bronchial tree.

Postmortem regurgitation of material into the bronchi does not induce active hyperemia. The material is not

TABLE 3.—Bronchial Aspiration of Vomitus: Distribution Among Diseases Essentially Surgical, 1929-1938

	Number of Cases
Stomach and duodenum (perforation, gastric resection, infarction)	22
Biliary tract and liver (cholecystectomy, cholecystogastrotomy, carcinoma, cirrhosis).....	18
Hemorrhagic infarctions of the small or large bowel (embolism and thrombosis).....	11
Bowel obstruction (adhesions, volvulus, incarceration).....	10
Prostate gland (enucleation and resection).....	9
Female genitalia (carcinoma, fibromyoma, pregnancy).....	9
Cerebral neoplasm (glioma and carcinoma metastases).....	9
Bacteremia (lacerations of skin, phlegmons, lymphangitis).....	9
Colon and rectum (resection of carcinoma).....	9
Pancreas (necrosis and carcinoma).....	6
Urinary bladder (carcinoma).....	5
Fracture of cranial bones.....	3
Total number of necropsies.....	1,074
Instances of aspiration.....	169

found in the bronchioles, and the lung tissues are not altered by hyperemia and edema. Bacteriologic examinations made of fresh tissues will easily demonstrate the relationship between antemortem bronchial aspiration of gastrointestinal material and the changes in the lung tissue.

In patients in whom at necropsy extensive aspiration pneumonia is found, the antemortem diagnosis has sometimes been acute dilatation of the heart, cardio-

vascular collapse, shock, pulmonary embolism, coronary thrombosis, compression atelectasis and bronchopneumonia. Such diagnoses are evidently clinical attempts to account for sudden or unexpected changes in the patient's condition. Frequently this form of pneumonia is only the terminal event in the illness of patients who would shortly die of other diseases, but in a considerable number it is a major complication and determines the fatal outcome. In some instances at least this might have been avoided.

A review of the associated pathologic changes suggests some of the more obvious causes leading to aspiration pneumonia. Of the 169 recognized instances, in forty there was dilatation of the stomach, or obstruction or infarction of the bowel, conditions frequently leading to eructations and vomiting (table 2). Aspiration pneumonia is frequently associated with operations on the stomach and biliary tract (table 3). In another group of thirty-three instances of nonsurgical conditions such as cerebral thrombosis or tumor, uremia, meningitis and coma, which obviously lead to abolition of protective reflexes, aspiration bronchopneumonia was present (table 4).

A study of progress notes and nurses' records of patients in whom aspiration pneumonia was found

TABLE 4.—Bronchial Aspiration of Vomitus: Distribution Among Diseases Essentially Nonsurgical

	Number of Cases
Apoplexy (cerebral hemorrhage, embolism and thrombosis).....	8
Uremia	7
Meningitis (suppurative and tuberculous).....	6
Dysentery (amebic, paratyphoid, bacillary).....	6
Lobar pneumonia	4
Diabetic coma	2
Total number of necropsies.....	1,074
Instances of aspiration.....	169

showed that hiccup, retching and nausea were more common than vomiting. One patient, with brain tumor, who was continuously and uninterruptedly watched during his postoperative course, had slight diaphragmatic contractions but no vomiting whatever, yet at necropsy extensive and typical aspiration pneumonia was found. It is believed that the postoperative use of continuous aspiration of the stomach has reduced the incidence of this form of pneumonia.

Another group of cases which contributes a rather high incidence of aspiration pneumonia (fifteen) is that of operations on the prostate gland and urinary bladder. Patients in this group are usually advanced in age and often in other respects are poor surgical risks. In such patients ileus is not infrequent.

Pulmonary complications suggestive of pneumonia in patients with evident dilatation of the stomach or other gastrointestinal obstruction, or in patients with diaphragmatic spasms, hiccup or vomiting, are likely to be due to aspiration of stomach content and contribute to the large group of aspiration pneumonia. Hiccup and slight eructations are more common than frank vomiting, possibly because patients able to vomit vigorously are more often in possession of active tracheobronchial reflexes and are better able to expel such foreign material as enters the trachea.

While this discussion is based on necropsies and deals necessarily with the cases of more severe involvement, clinical studies suggest that a considerable number of nonfatal respiratory complications in patients after oper-

ations and in those suffering from other diseases in which there occur eructations and vomiting, or in patients in whom the tracheobronchial reflexes are dulled, are caused by the aspiration of regurgitated stomach content. Undoubtedly, many of these patients recover, possibly because the aspirated material contains hydrochloric acid and consequently few bacteria.

In this connection, the conclusions of King,⁵ who made a careful clinical study of postoperative pulmonary complications combined with painstaking correlations with x-ray films, are of interest:

Purulent bronchitis and pneumonitis are present in practically all instances of the type of pulmonary complication here described. Atelectasis is associated with the infection in about one half the cases, but severe and fatal cases are usually true bronchopneumonias without evidence of atelectasis at any stage.

Complications occur especially in males following operations on the stomach and duodenum, gallbladder and intestines. . . . Seasonal and preoperative respiratory infection play a minor part. . . . From a statistical standpoint, the type of anesthesia is without significance.

SUMMARY

Aspiration of regurgitated stomach content is one of the frequent causes of pulmonary complications in persons who have undergone operations or who are suffering from diseases in which the protective tracheobronchial reflexes are impaired. Aspiration bronchopneumonia causes characteristic alterations in the tissues of the lungs and thorax, recognizable most surely when necropsies are made within an hour or two after death. Cultures of lung tissue, tracheal and stomach contents and blood afford additional evidence. Experimentally, the characteristic manifestations in man can be produced in dogs by the intratracheal injection of stomach content.

Aspiration bronchopneumonia is a relatively frequent finding in persons dead of all causes. In many it is a major cause of death.

In the more severe cases it can be recognized clinically if the conditions under which it most frequently occurs are kept in mind. In less severe cases its occurrence may be surmised.

122 South Michigan Avenue.

ABSTRACT OF DISCUSSION

DR. J. P. SIMONDS, Chicago: The clinical diagnoses commonly made in this type of pneumonia are stated in the paper. The pathologist usually designates the condition, which he knows has certain specific characteristics, as a terminal bronchopneumonia without inquiring too closely into the pathogenesis of the disease. In calling attention to this subject, the authors have done a real service. The characteristic pathologic changes described in aspiration bronchopneumonia are pulmonary hyperemia, edema and hemorrhage. These conditions in the lungs, with their huge vascular bed and capacity for impounding blood and permitting fluid and red cells to escape from it, can easily produce as a result of chemical or even bacterial injury a clinical condition which answers to the well known characteristics of shock, namely fall in blood pressure and increase in the concentration of the circulating blood. I should like to ask whether there was any difference in the incidence of shock-like symptoms after the aspiration of acid gastric juice on the one hand, or of nonacid gastric juice, rich in bacteria, on the other. A purely chemical irritant, such as strongly acid gastric juice, would induce an inflammatory reaction with its hyperemia, edema and hemorrhage more quickly than would nonacid gastric juice, because the development of the inflammation would have

to wait on the slower bacterial growth. Every pathologist has observed bronchopneumonias at autopsy which differ from the ordinary types in the intense hyperemia of the mucosa, the marked desquamation of the epithelium of the bronchi and bronchioles, the extreme degree of laking of red blood cells in the exudate within the alveoli or the large masses of bacteria in the exudate when red cells are not so numerous. These types Dr. Irons and Dr. Apfelbach have shown are the result of the action of aspirated gastric contents on the lung. I should like to ask Dr. Irons to what extent examination of the sputum has been used in attempts to make a correct clinical interpretation of this condition. From the pathologic changes in the lungs, one might expect the sputum from these patients to have certain rather distinctive characteristics. As 71 per cent of the patients in whom Dr. Apfelbach found aspiration bronchopneumonia at autopsy were from surgical services of the hospital, I regret that the surgical section cannot also hear this paper, because so many of the cases concern surgical conditions. It is evident from the facts presented that prophylaxis is more important than treatment of aspiration bronchopneumonia. This paper is an excellent example of the value of full cooperation on a basis of equality of clinician and pathologist in a study of problems of this kind.

DR. WILLIAM J. KERR, San Francisco: Dr. Irons and Dr. Apfelbach have made an important contribution. I think all of us have observed the conditions, both clinically and at the autopsy table, but I admit that I have not appreciated fully the nature of this condition. The cultural studies, as the authors have pointed out, are of considerable importance especially if the tissues can be seen soon after death; we all have had observations in the autopsy room where the pathologist would say "It is of no value to make cultural studies in this particular condition," but the authors have shown that it is important if we wish to get to the bottom of the problem. More attention should be given to the use of other measures which will prevent the diaphragm from being fixed by putting on tight binders and that sort of thing, which may be harmful; but everything should be done which will facilitate respiration and normal upper abdominal function. In view of the fact that a number of these arise in connection with shock and semiconsciousness, we should keep in mind that many patients who are in the terminal stage of some chronic and incurable disease may also have this condition, about which we may be able to do but little. The pictures which were shown were very realistic. In fact, I can see more in the picture than I can sometimes see at the autopsy table in examining the specimens.

DR. CARL W. APFELBACH, Chicago: In answer to Dr. Simonds's question about the difference between this condition, when produced by acid containing fluid in contrast to non-acid containing stomach content, I would say this: In experiments, Dr. Christianson and I found that gastric fluid containing normal amounts of hydrochloric acid usually did not produce death, but a temporary hyperemia of the lungs occurred. Also stomach content free of hydrochloric acid and containing bacteria, when passed through a Berkefeld filter, also produced only a transitory hyperemia of the lungs. Death occurred in animals only if stomach content containing bacteria was used. I do not know that I can recognize the alterations in human lungs produced by the aspiration of stomach content that has a normal constituency of acid. As far as the examination of sputum during life is concerned, we have had only a few cases available. This is due probably to the fact that cardiovascular collapse or heart failure is diagnosed clinically, and sputum consequently is not sent to the laboratory. Furthermore, because of the weakened condition of these patients, sputum is infrequently obtained. I believe that the outstanding anatomic changes to be observed are the following: The necropsy should be performed soon after death so that postmortem changes do not hide and confuse the alterations of acute aspiration of stomach content. Routine cultures of lungs, blood material from the gastrointestinal tract, and all exudates from each postmortem examination allow a better evaluation of the bacterial flora found in aspiration bronchopneumonia. We have observed that postmortem invasion of the body by bacteria does not occur as rapidly as is generally believed, except in gas bacillus infections.

5. King, D. S.: Postoperative Pulmonary Complications, Surg., Gynec. & Obst. 56:43 (Jan.) 1933.

TREATMENT OF PSORIASIS

JOHN F. MADDEN, M.D.

ST. PAUL

In this communication I am reporting the results of my continued observations on the treatment and handling of patients with psoriasis. To be sure, no specific remedy has been discovered but some of the facts gleaned are worth recording.

One hundred and twelve patients were treated from October 1937 to October 1939 with vitamin D, vitamin B₁, vitamin B complex, brewers' yeast, vitamin C, liver extract, diluted hydrochloric acid, estrogenic substance, sulfanilamide, bismuth salicylate, anterior pituitary extract or adrenal cortex extract alone or in combination with one another or in combination with a low fat diet. All the patients were ambulatory, some received several types of treatment, and only those with definite clinical and microscopic psoriasis were studied. The patients were started on the type of treatment being used when they were first examined. If a change was not noted in the psoriasis after a certain time had elapsed, another kind of treatment was given. Patients were treated at least four weeks unless they could not tolerate the medication. Local applications were not used. The following types of treatment were chosen because of favorable reports in the literature regarding their use in psoriasis or because of the general empiric use of some of the medications in many cutaneous diseases:

VITAMIN D

Vitamin D has received considerable attention as a treatment for psoriasis. Monash¹ treated six patients with from 12 to 20 drops of viosterol and noted improvement in all the cases. Krafka² observed that three cases of psoriasis were greatly benefited by the administration of vitamin D given in the small dose of 6 minims (0.36 cc.) of halibut liver oil with viosterol. Cedar and Zon³ treated a series of fifteen patients from 30 to 50 years of age who had chronic widespread psoriasis with from 300,000 to 400,000 units of vitamin D in the form of viosterol. In eleven of the fifteen cases the psoriasis completely involuted within six to twelve weeks. One of their cases had two recurrences in which equally good results were obtained with vitamin D. Brunsting⁴ observed marked clinical improvement in over 60 per cent of his nineteen cases treated with massive doses of vitamin D.

Twenty-four adult patients were given from 350,000 to 450,000 units of vitamin D daily on bread in the form of irradiated ergosterol for a period of four to twelve weeks. The eruption showed no change in eighteen cases, improvement in four cases, and it became steadily worse in one case and entirely disappeared in one case. The medication was stopped in eight cases because of reactions such as nausea, loss of appetite, vomiting, diarrhea and abdominal pain accompanied by

loss of from 6 to 11 pounds (2.7 to 5 Kg.) of body weight. All of these reactions were generally present in each patient. The improvement of psoriasis usually accompanied or followed the reactions. The patient whose eruption entirely involuted had one of the most severe reactions. One patient who could not return to the hospital for two weeks but continued to take the medication developed severe diarrhea, nausea, vomiting and inability to retain food and lost 11 pounds (5 Kg.) of body weight. It was necessary to confine him to the hospital for two weeks and administer intravenous feeding. In this group of psoriatic patients vitamin D was not only generally of no value but a dangerous medication in some cases. It should never be given in massive doses except when the patient is under frequent observation. The patients who tolerated vitamin D well usually showed no change in their eruption. The degree of improvement in the psoriasis corresponded to the severity of the reaction to vitamin D. When the reactions subsided the psoriasis recurred.

VITAMIN B₁

Twenty-seven patients received from 750 to 1,250 international units of vitamin B₁ daily by mouth for a period of from four to ten weeks. The psoriasis showed no change in eighteen cases, marked improvement in five cases and complete involution in four cases. The four patients remained free from eruption from three months to two years. When psoriasis recurred the same treatment had no effect in two cases but did effectively control the eruption in the other two cases.

VITAMIN B COMPLEX

Fourteen patients were given vitamin B complex containing from 600 to 900 international units of vitamin B₁, from 80 to 120 Sherman units of vitamin B₂ and an unstated quantity of vitamin B₃, B₄, B₅, B₆ and nicotinic acid for a period of from four to ten weeks. Psoriasis showed no change in thirteen cases and became much worse in one case.

BREWERS' YEAST

Twenty patients were given 54 grains (3.4 Gm.) of brewers' yeast containing 85 international units of vitamin B₁ and 143 Sherman units of vitamin G (B₂) each day by mouth for a period of from four to eight weeks. The psoriasis did not change in fourteen cases, became worse in four cases and showed marked improvement in two cases.

VITAMIN C

Reiss⁵ observed no clinical improvement in psoriasis treated with vitamin C, although there was a definite decreased excretion of vitamin C in all his cases. Volpe⁶ stated that his cases responded in a "striking" manner to the administration of ascorbic acid. Spillman, Drouet and Weille⁷ found that anterior pituitary and vitamin C had little effect on a single case of psoriasis.

Seventeen patients were given from 100 to 150 mg. of ascorbic acid daily by mouth for a period of from four to ten weeks. The psoriasis showed no change in thirteen cases, became worse in three cases and improved in one case.

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From the Ancker Hospital and the Division of Dermatology and Syphilology, the University of Minnesota Medical School, Dr. H. E. Michelson, Director.

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LIVER EXTRACT AND DILUTED HYDROCHLORIC ACID

Gruenberg⁸ found that liver therapy decreased the tendency toward recurrence in psoriasis and favorably influenced healing of existing lesions. Spiethoff⁹ also thought that liver extract was effective in the treatment of psoriasis and helped prevent or delay recurrences but that it was of value only as long as the liver was given. In an analysis of the gastric contents of thirty-five patients with psoriasis Madden¹⁰ noted that free hydrochloric acid was entirely absent or below normal limits in 61 per cent and that total acid was absent or below normal in 64 per cent of his cases.

Thirty-five patients were given liver extract equivalent to approximately 180 Gm. of fresh liver and 75 drops of diluted hydrochloric acid daily by mouth for a period of from four to eight weeks. The psoriasis showed no change in twenty-one cases, became worse in four cases, improved in six cases, involuted except for a few papules in one case and entirely disappeared in three cases. Lesions recurred in one month in one case and were not influenced by a resumption of treatment. The other two patients have remained free from psoriasis for thirteen months. The patients whose psoriasis disappeared showed diminished or absent free and total hydrochloric acid in their gastric contents.

ESTROGENIC SUBSTANCE

Keller¹¹ gave female sex hormone in the form of 150 mouse units of progynon daily for twenty-five days to a patient with psoriasis arthropathica and amenorrhea with favorable results. Sochatzy¹² treated one case with corpus luteum extract by mouth and the psoriasis healed in twenty days. Sperry¹³ treated one patient who had amenorrhea and psoriasis with 3 cc. of theelin daily intramuscularly until 15 cc. had been given. The patient menstruated and the eruption began to disappear. She missed a menstrual period and the lesions recurred. The psoriasis again disappeared following the use of more theelin.

Twenty-three patients were given estrogenic substance for a period of from four to eight weeks. Eleven patients received 4,000 international units of estrogenic substance daily by mouth. The eruption showed no change in nine cases and involuted except for a few scattered papules in two cases. One of these patients was 64 and the other 32 years old. Twelve patients received from 1,000 to 10,000 international units of estrogenic substance intramuscularly twice a week. The psoriasis remained the same in eight cases, became much worse in two cases and showed noticeable improvement in two cases.

SULFANILAMIDE

Sulfanilamide was given in 10 grain (0.65 Gm.) doses three times daily to ten patients for a period of from two to four weeks. The drug was stopped in six cases because of vertigo, nausea, cyanosis or dermatitis. The state of the psoriasis did not change in any case.

BISMUTH SALICYLATE IN OIL

Eight patients were given 1 cc. of bismuth salicylate in oil containing 2 grains (0.13 Gm.) of bismuth salicylate at weekly intervals for five weeks. The psoriasis showed no change in seven cases and entirely involuted, except for two small papules on the glans penis, in one case in which there was a generalized guttate eruption. The eruption began to disappear after the first injection in this case and has not recurred during thirteen months of observation.

ANTERIOR PITUITARY EXTRACT

Walinski¹⁴ gave anterior pituitary extract in six cases of psoriasis and five cases improved but none were completely cured.

Six patients were given anterior pituitary extract equivalent to 30 grains (2 Gm.) of fresh anterior pituitary lobe substance daily by mouth for a period of four weeks. The psoriasis did not change in five cases and improved in one case.

ADRENAL CORTEX EXTRACT

Riehl¹⁵ treated twenty patients with adrenal cortex extract and found the clinical effect uncertain and the results disappointing in most cases and acute exacerbations appeared during treatment in some cases. Gruenberg¹⁶ treated 150 psoriatic patients with adrenal cortex extract with good and in some cases excellent results. He gave from 2 to 6 cc. daily in increasing doses. He thought a low fat diet added to the success of adrenal cortex therapy. Richter¹⁷ thought that every one of his sixty-five cases showed disturbed internal secretion, principally a disturbance of the adrenal cortex, and that the hypophyseal hormone was not indicated in treatment because it increased psoriasis. Gruenberg¹⁸ stated that psoriatic patients showed an increased sulfur content of the skin, and since the adrenals, especially the cortex, influenced the sulfur content of the skin he treated twelve patients with adrenal cortex extract. He injected from 2 to 3 cc. of the adrenal cortex extract intramuscularly each day and two cases almost healed. Kissmeyer, Chrom and Jacobsen¹⁹ treated twenty-eight cases of psoriasis with cortical extract of pig's adrenals and "permanently cured" nine patients, seven showed improvement and twelve were not improved.

Six patients were given 1 cc. of adrenal cortex extract representing 40 Gm. of fresh adrenal cortex intramuscularly twice a week for a period of from four to eight weeks. The psoriasis remained stationary in five cases and improved steadily in one case.

LOW FAT DIET AND VITAMIN B₁

Thirteen patients were given a low fat diet and 1,000 international units of vitamin B₁ daily by mouth for a period of from four to ten weeks. The low fat diet was not a measured or weighed diet but merely one in which the foods high in fat content were eliminated. The psoriasis remained the same in three cases, improved in three cases, involuted except for a few

8. Gruenberg, T.: Die Lebertherapie der Psoriasis, *Dermat. Wehnschr.* 97:173-1797 (Dec. 23) 1933.

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scattered papules in four cases and entirely disappeared in three cases. The eruption reappeared in six months in one case, in eight months in one case, and has not reappeared after one year's observation in the third case. The treatment effectively controlled the recurrences in the two cases.

LOW FAT DIET AND LIVER EXTRACT

Seventeen patients were given a low fat diet and liver extract equivalent to approximately 180 Gm. of fresh liver daily by mouth for a period of from four to eight weeks. The psoriasis showed no change in seven cases, became worse in two cases, improved in seven cases and entirely involuted in one case. This patient has been free from psoriasis for seven months.

LOW FAT DIET, VITAMIN B₁ AND ANTERIOR PITUITARY EXTRACT

Nineteen patients were given a low fat diet, 750 international units of vitamin B₁ and anterior pituitary extract equivalent to 30 grains (2 Gm.) of fresh anterior pituitary lobe substance daily by mouth for a period of from four to eight weeks. The psoriasis showed no change in sixteen cases, improved in two cases and almost disappeared in one case.

LOW FAT DIET, VITAMIN B₁, ANTERIOR PITUITARY EXTRACT AND ADRENAL CORTEX EXTRACT

Pulay²⁰ concluded that there are three factors to be considered in the treatment of psoriasis: treatment by diet, endocrine therapy and vitamin B therapy. His patients were given anterior pituitary extract, pancreatic extract, adrenal cortex extract, vitamin B₁ and a diet in which fats and proteins were eliminated as far as possible. In 850 cases 75 per cent were healed. The results were durable only if the patients adhered to the diet and took the hormones from time to time.

Twenty patients were given a low fat diet, 750 international units of vitamin B₁ daily by mouth, 1 cc. of adrenal cortex extract representing 40 Gm. of fresh adrenal cortex intramuscularly twice a week, and anterior pituitary extract equivalent to 30 grains (2 Gm.) of fresh anterior pituitary lobe substance daily by mouth for a period of from four to eight weeks. The psoriasis showed no change in thirteen cases, improved in six cases and entirely involuted in one case. This patient remained free from psoriasis for two months and a resumption of treatment did not control the eruption when it recurred.

COMMENT

Vitamin D was not only generally of no value in this group of cases of psoriasis but was a dangerous medication in some cases. It should never be given in massive doses except when the patient is under frequent observation. The patients who tolerated vitamin D well usually showed no change in their eruption. The degree of improvement in the psoriasis corresponded to the severity of the reaction to vitamin D. When reactions subsided the psoriasis recurred.

Psoriasis improved greatly in five and completely involuted in four out of a group of twenty-seven cases following the administration of vitamin B₁. When psoriasis recurred the same treatment had no effect in two cases but did effectively control the eruption in the other two cases. Vitamin B₁ is of some value when given alone and it effectively controlled 50 per cent of the recurrences.

Psoriasis improved in six, involuted except for a few papules in one and entirely disappeared in two of a group of thirty-five cases in which liver extract and diluted hydrochloric acid were given. Recurrent lesions in one case were not influenced by a resumption of treatment. The patients whose psoriasis disappeared showed diminished or absent free and total hydrochloric acid in their gastric contents.

Estrogenic substance was of benefit in four of a group of twenty-three cases. Psoriasis in two patients 32 and 64 years of age involuted except for a few scattered papules, and two patients became much worse while receiving the same treatment.

Bismuth salicylate in oil caused involution, except for two small papules on the glans penis, in one patient with a generalized guttate eruption of a group of eight patients with psoriasis.

Estrogenic substance and bismuth salicylate in oil are of value in an occasional case.

A low fat diet combined with vitamin B₁, liver extract, anterior pituitary extract or adrenal cortex extract was more effective than the foregoing medications given alone. However, the combinations were not as beneficial as a low fat diet given alone in a previously reported series of cases²¹ except when the diet was combined with vitamin B₁. This could be explained by the fact that the patients in this study were ambulatory and their diet could not be positively controlled, while the patients previously treated by a low fat diet alone were hospitalized for varying periods and their diet was positively controlled.

Vitamin B complex, brewers' yeast, vitamin C, sulfanilamide, anterior pituitary extract and adrenal cortex extract were of little or no value in this series of cases.

Considering over 300 psoriatic patients whom I have treated during the the past five years, I believe that it is better to treat the disease than to tell the patient that nothing can be done.

After a considerable experience with the methods outlined, my treatment of choice at the present time is a low fat diet plus 1,000 international units of vitamin B₁ daily by mouth combined with an exfoliating ointment. I well realize that some patients will not respond to this regimen.

350 St. Peter Street.

ABSTRACT OF DISCUSSION

DR. DONALD M. PILLSBURY, Philadelphia; Dr. Madden reported the results of various types of treatment in 112 cases of psoriasis treated in consecutive groups. Each type of treatment was carried out on a group of patients at the same time of year. The various remedies used included, first, vitamin D in a dosage of from 300,000 to 400,000 units by mouth in twenty-four cases, vitamin B₁ by mouth in a dosage of from 75 to 125 international units in twenty-seven cases, vitamin B complex, yeast, combined treatment with liver extract by mouth and diluted hydrochloric acid in a dose of 75 drops daily, estrogenic substance, sulfanilamide in a dose of 30 grains (2 Gm.) daily, bismuth salicylate injections, anterior pituitary extract, adrenal cortex extract, a low fat diet combined with vitamin B₁ by mouth, and liver extract. He found that a low fat diet combined with vitamin B₁ by mouth seemed to produce the greatest degree of improvement. This study resulted in an adequate trial of popular remedies; that is, the vitamin and endocrine preparations. Dr. Madden did not intimate that any startling results as to the cure of psoriasis had been obtained. There is the hope that some light may be thrown on the basic change in psoriasis. There are a variety of remedies which produce

20. Pulay, E.: Le "psoriasis vulgaris" et son traitement, Bull. Soc. franç. de Dermat. et Syph. 42: 1508-1521 (July) 1936.

21. Madden, J. F.: Cholesterol Balance and Low Fat Diet in Psoriasis, Arch. Dermat. & Syph. 39: 263-276 (Feb.) 1939.

temporary involution at times. We have no notion of the basic change which has occurred in the patient. The Kefner phenomenon shows that the skin at certain phases of the disease reacts with a characteristic pattern and that with application of an appropriate stimulus a lesion of psoriasis develops in from seven to ten days. The clinical course of psoriasis thus is somewhat better understood; that is, many stimuli seem to cause a flare-up; trauma produces lesions at certain sites, and the localization of psoriatic lesions to the elbows and knees and possibly to the lower part of the back may to some extent be attributed to this. One can't follow the theory all the way through, but it seems to shed some light. The x-rays, light and scratches occasionally produce flare-ups. A consideration of this phenomenon is worth while in the particular type of local treatment at least which is to be used. In an advancing psoriasis it might not be well to use a method of scrubbing the lesions thoroughly because one may be producing a Kefner phenomenon at the site. Treatment of the underlying condition, whether seborrhea or ichthyosis or a monilian infection, is worth while in lessening the amount of irritation which is already present. I should like to ask Dr. Madden if he knows of any control series of these patients. As to vitamin D, his results are in accord with my experience, at least as far as the fact that it has not helped. With regard to vitamin B₁, I think that it might be worth while to give it intravenously in some cases.

DR. JOSEPH V. KLAUDER, Philadelphia: I believe that basic changes in the pathogenesis of psoriasis concern the oxidation-reduction mechanism of the epithelial cell, a view championed by von Kerkhoff (Beiträge zur Kenntnis der Psoriasis vulgaris und ihrer Behandlung, Leipzig, S. Hirzel, 1929). Sulfur compounds, especially glutathione, are essentially physiologic tissue constituents concerned in biologic oxidation-reduction phenomena. There is reported evidence of disturbance of sulfur metabolism in psoriasis. Brown and I reviewed this evidence in our paper on certain phases of sulfur metabolism of the skin in the *Archives of Dermatology and Syphilology* in 1936, in which we reported an abnormally high percentage of sulfur in the skin of patients with psoriasis. I may suggest that, if Dr. Madden continues investigation of the therapeutics of psoriasis, he give consideration to disturbance of sulfur metabolism in order to obtain a clue in treatment of the disease. As pointed out in our paper, extract of the adrenal gland has been used in treatment of psoriasis since it has been shown that such administration increased the sulfur content of the skin of rats and rabbits. Likewise liver therapy, since it has been shown that administration of liver extract causes an increase of glutathione in the skin.

DR. JOHN F. MADDEN, St. Paul: In answer to Dr. Pillsbury's question, I do not know of a control series wherein patients who have not had any treatment over a long period of time have been under medical observation. However, I secured a detailed history in each case and many of this psoriatic group did not have any treatment for a period of years and they gave intelligent observations regarding the progress of the psoriasis. I considered this a control in itself.

Pellagra in Relation to Mental Disease.—The importance of pellagra in its relation to mental disease is increasingly recognized. Pellagra was described in the eighteenth century as occurring in Spain and in Italy, and in the nineteenth century cases were recognized in France, Rumania, Egypt, the United States and the British Isles. In 1866 Howden and Montrose described the first case in the British Isles, but no further mention is made in British literature until in 1909 Brown and Cranston Low described a second case. Since that time numerous cases have been described by other observers. An idea of the prevalence of the disease may be gained from the fact that Lavinder in 1912 estimated that 30,000 cases of pellagra had occurred in the United States of America during the five preceding years; in Italy a yearly estimate of from 50,000 to 60,000 cases is conservative; while in Rumania, with a population of a little over 5,000,000 individuals, there are 40,000 to 50,000 pellagrins. Since from 4 to 10 per cent of all pellagrins show mental symptoms, its psychiatric importance is considerable.—Henderson, D. K., and Gillespie, R. D.: *A Text-Book of Psychiatry for Students and Practitioners*, London, Oxford University Press, 1940.

BIRTH CONTROL CENTERS

REPORT OF 202 IN THE UNITED STATES
FOR THE YEAR 1939

ROBERT L. DICKINSON, M.D.

AND

WOODBIDGE E. MORRIS, M.D.

Vice President and General Medical Director, Respectively,
Birth Control Federation of America

NEW YORK

The maternal health center for contraceptive advice is a comparatively new development in this country. The first of these centers, the Birth Control Clinical Research Bureau, was organized in New York by Margaret Sanger in 1923 with a physician in charge. The fact that 1,208 patients were advised during the first year of the bureau is evidence that it filled a need, for, under the law, its services could not be advertised, nor was it listed among the city's various health agencies.

At the close of 1939, sixteen years after the establishment of the first center, 549 of them were functioning under medical direction in forty-two states. Of these, 171 were located in public health departments, ninety-two in hospital quarters and 286 in settlement-houses, church houses and extramural quarters. The majority of the public health services were in North and South Carolina, with seventy and forty-five services respec-

TABLE 1.—Sources of Referral

	Number
Other patients.....	22,206
Social agencies.....	13,651
..	4,694
..	3,637
..	1,649
Transfers.....	665
Total.....	40,582

tively. In both these states the state board of health, each county health department and each county medical society were cooperating in this public health service for the underprivileged.

STANDARDS

The growth of centers necessitated supervision and standardization. For a center to be certified by the Birth Control Federation of America, it must conform to the following:

1. It shall be a nonprofit organization.
2. It shall in no way be affiliated with or subsidized by any commercial manufacturer of contraceptives. No member of the sponsoring group or clinic personnel shall derive any profit directly or indirectly from the manufacture, distribution or sale of contraceptives either chemical or mechanical.
3. It shall be staffed by physicians graduated from recognized medical schools and licensed to practice medicine and surgery in their respective states.
4. There shall be a nurse and/or a social service worker in attendance. Where there is a male clinician, a nurse is essential.
5. Adequate clinical and follow-up records shall be kept for each patient. All certified centers are required to submit reports based on these records. (Case record cards and report forms for clinic statistics are furnished by the federation.)
6. The center shall have a representative medical advisory board (a minimum of three physicians exclu-

sive of the clinicians) which shall decide all matters of medical policy in reference to the center.

Other standards which are recommended to local centers are that fees should parallel those in private or public clinics in the community, that patients found in need of surgical or other medical care are to be referred to private physicians or clinics, that the methods of

or individuals whose income level was above the limit set by the medical and lay boards of the centers. Where patients were ineligible because of high income for service at the centers, referral was made to private physicians in the community.

SOURCE OF REFERRAL

For the period from Jan. 1, 1939, to Dec. 31, 1939, a total of 46,582 new patients was accepted for contraceptive advice. The sources of referral are given in table 1. The major source of referral—other patients—accounts for some 48 per cent of new cases, while 39 per cent came from physicians and social agencies. By 3,687 women (8 per cent) the clinic had been heard of from friends or they had read about the service and had come unreferred.

REPRODUCTIVE HISTORY

The total number of preclinic pregnancies reported by these new patients was 122,775, or an average pregnancy rate of 2.64. As the report forms did not specifically ask for the number of stillbirths, data on these have not been included in the reported pregnancies.

The average parity, prior to coming to the center, was 2.27, showing an average pregnancy wastage of 0.37. The percentage of pregnancy wastage (13.8) is considerably lower than the 28.5 per cent (due to spontaneous and induced abortions) reported by Marie Kopp in her study of cases at the Birth Control Clinical Research Bureau in New York City during the period from 1925 to 1929.¹ A comparison with the average pregnancy rate reported by Kopp (3.89) shows a decrease of 1.65. This decrease may indicate that the women applying for contraceptive advice today generally come at an earlier period in their reproductive cycle or that the methods used prior to clinic visit are more effective than those used a decade ago.

TABLE 4.—Economic Status

	Number
Employed.....	20,573
Work relief.....	5,843
Home relief.....	5,288
Unemployed; no relief.....	4,578

TABLE 5.—Religious Affiliations of New Patients

Religion	Cases	Per Cent
Protestant.....	22,622	53.0
Catholic (Roman and Greek Orthodox).....	12,325	28.9
Jewish.....	7,321	17.1
Other or none.....	427	1.0
Total.....	42,695	100.0

Not all centers reported.

METHODS PRESCRIBED

The methods prescribed for this group of women are given in table 3. The prescription of an individually fitted rubber diaphragm and spermicidal jelly was found suitable for more than 90 per cent of the women who received advice. A small group of women (2.3 per cent) examined were advised on the use of the cervical cap and jelly or cream because of cystocele, rectocele, marked prolapse and other conditions. The prescription of a rubber sponge with foam-producing spermicidal powder was given in 2.0 per cent of the cases reported

1. Kopp, Marie E.: *Birth Control in Practice (Analysis of 10,000 Case Histories)*, New York, Robert M. McBride & Co., 1934.

TABLE 2.—Reproductive History

	Number	Per Cent
Living children.....	97,871	79.7
Dead children.....	7,058	5.5
Spontaneous abortions.....	10,338	8.4
Induced abortions.....	6,638	5.4
Total pregnancies.....	122,775	100.0

TABLE 3.—Methods Prescribed

	Cases	Per Cent
Diaphragm and jelly.....	42,785	91.9
Cervical cap and jelly.....	1,088	2.3
Sponge and foam powder.....	941	2.0
Miscellaneous.....	898	1.9
Condom and jelly.....	756	1.6
Jelly alone.....	114	0.3
Total.....	46,582	100.0

contraception and supplies to be used at the center are to be determined by the local medical advisory board, and that when clinical research is contemplated the medical committee of the federation be notified in order to avoid unnecessary duplication and to assure all safeguards.

All state leagues which are affiliated with the federation are expected to have medical advisory boards whose function it is to advise with local centers and their medical boards on procedure and requirements for admission of patients.

INTRODUCTION

With the rapid growth of birth control service in the United States, not only in the extramural centers but more recently in hospitals and public health services, an annual analysis of the data assembled by these services is in order.

Reports have been gathered by the Birth Control Federation of America from 202 birth control centers in thirty-three states and the District of Columbia. Included in the reports are those of twenty-three clinics in hospital quarters and eleven health department services.

Eligibility requirements in all but a few of these centers restrict contraceptive service to the indigent; in more than half there are required as well medical indications such as chronic kidney disease, cardiovascular disease, tuberculosis, venereal disease, nervous and mental disorders, pelvic deformities, adnexal disease, spacing of children, and so on. In general, the list of indications includes multiparity, particularly when the income level is low and when distinct evidence of undernourishment is at hand. Cases are accepted on medical indications satisfactory to the clinician in charge and his advisory board.

NEW PATIENTS

The total number of new applicants for birth control advice at the centers during 1939 was 48,214. Of this number 1,632 were not accepted as patients for various reasons, such as existing pregnancy, unmarried women, married women who are not living with the husband,

on, when other methods were found unsuitable or unacceptable. Another method prescribed as an alternative to the diaphragm and jelly method was the use of a condom and jelly for 1.6 per cent of the women advised.

REFERRAL FOR OTHER CARE

During the course of all physical examinations at the centers, 6,582 (6 per cent) of the women examined were reported to be in need of other medical or surgical care and were referred either to other clinics or to their own physicians for the necessary care. The detection of pathologic conditions that otherwise might have been left undiscovered was thus made possible through examination at the birth control center.

SOCIO-ECONOMIC DATA

Information was obtained regarding the 46,582 new patients' economic status as shown in table 4. It will be noted that approximately 34 per cent of the new patients advised were either on relief or unemployed. That the majority of the employed group was in the low income brackets is evident from the fact that 28,221 (60.5 per cent) of the new patients were advised and given materials either without any charge or for a fee of \$1 or less.

RELIGION

Data gathered concerning the religious affiliations of new patients were sent by the majority of centers, although a few do not include the question of religion in their case histories. The figures reported are given in table 5.

COLOR

White patients (86.7 per cent) were in the majority, Negro patients accounting for only 11.9 per cent of the total. (The United States Negro population is 9 per cent, according to the estimate of the National Resources Planning Board.) In addition, 1.4 per cent other patients—the majority Mexican Indians—were admitted to the centers in the past year.

OLD PATIENTS

In addition to the 46,582 new patients admitted and advised, 69,170 old patients made return visits for examination and necessary contraceptive supplies. In most of the reporting centers, patients are requested to return for check-up examinations at stated periods, varying with the local clinic's procedure. The check-up consists of a vaginal examination by the clinic physician and a check on the fit of the diaphragm or cap and of the patient's technic. At the time of these check-ups the physician also examines the condition of the diaphragm or cap. During 1939, old patients made 85,591 visits for examination. In this group of 69,170 old patients, 1,130 women reported that since their physical and economic condition had improved they were now planning to have babies.

CONCLUSION

A total of 115,752 patients (46,582 new and 69,170 old) was advised in the 202 centers reporting to the Birth Control Federation of America during 1939. Medical direction is universal and a medical advisory board general. These are nonprofit organizations with no commercial affiliation. They keep records. Patients are accepted only on adequate indications. Sixty per cent of the service is given without charge or for the cost of materials, that is, to people who would probably not go to private physicians. More than one third were on relief or unemployed.

17 West Sixteenth Street.

COLD VACCINES

A FURTHER EVALUATION

H. S. DIEHL, M.D.; A. B. BAKER, M.D.

AND

D. W. COWAN, M.D.

MINNEAPOLIS

Something over a year ago we reported a series of controlled studies of several vaccines which are advocated for the prevention of colds. One of these was a mixed bacterial vaccine for subcutaneous administration, the organisms in which were destroyed mechanically instead of by heat. The other two vaccines were of the type recently developed for oral administration. The results of these studies were summarized as follows:¹

In a carefully controlled study of the value of three different vaccines which are recommended for the prevention of colds the subjects were cold-susceptible students of the University of Minnesota.

A "control group" was observed during each year of the study. Such groups were chosen at random from the students who applied for cold prevention treatment; the members were treated in exactly the same manner as those of the vaccinated groups, and they believed throughout the period of the experi-

Results with Heat-Killed Bacterial Vaccine Administered Subcutaneously

	Vaccinated Group	Control Group
Subjects who began study.....	119	106
Subjects who completed study.....	92	88
Percentage	77.3	83.0
Number of colds per person during previous year * (average).....	4.7 ± 0.13	4.9 ± 0.15
Number of colds per person during year of study (average).....	2.1 ± 0.09	1.9 ± 0.09
Difference between average number of colds in experimental and control groups	0.2 ± 0.13	
Percentage of group who had no colds during year	8.7	13.6
Number of days per person lost from school (average)	1.1	1.2
Percentage of patients with colds in whom complications developed.....	20.7	27.3
Percentage of group reporting reactions to the vaccination.....	50.0	6.9

* Reported from memory.

ment that they were receiving vaccine. Sterile physiologic solution of sodium chloride was administered hypodermically as a control for the subcutaneously administered vaccine and lactose filled capsules as a control for the vaccines administered orally.

One of the most significant aspects of this study is the great reduction in the number of colds which the members of the control groups reported during the experimental period as compared to the number that the same students reported for the previous year. In fact, these results were as good as many of those reported in uncontrolled studies which recommend the use of cold vaccines.

The group which received vaccine subcutaneously experienced an average of 25 per cent less colds per person than did the control group. This difference occurred during both years of the study and is statistically significant. Practically, however, it is of little or no importance, because a reduction of 25 per cent in the average number of colds in a group of individuals is not sufficiently great to justify the time and expense involved in carrying out the intensive vaccination procedure which was utilized.

The group which received the polyvalent vaccine administered orally experienced just as many colds as the control group during both years of the study.

1. Diehl, H. S.; Baker, A. B., and Cowan, D. W.: Cold Vaccines: An Evaluation Based on a Controlled Study, J. A. M. A. **111**: 1168-1173 (Sept. 24) 1938.

The results reported by the students who took Rosenow's streptococcus vaccine parallel exactly those reported for the control group.

Although the data are not entirely conclusive, there is no evidence in this study either that vaccines reduce the complications of colds or that the condition of the nose and throat is related to the frequency of colds in a cold-susceptible group.

THE SUBSEQUENT STUDY

Following the publication of the foregoing report, we received several communications from physicians who felt that we should have included in our studies the traditional type of heat-killed bacterial vaccine, long used for the prevention of colds. It had been our opinion that the results obtained with the mechanically killed bacterial vaccine should be applicable also to the heat-killed vaccine, but since we had no real evidence in this regard we felt that we should continue these studies in order actually to determine results with this type of vaccine.

The conditions of the continuation study were exactly the same as those which were described in our previous report. Comparable experimental and control groups were set up. The experimental groups received the vaccine and the control groups sterile physiologic solution of sodium chloride during the school year 1938-1939. The vaccine² used consisted of the following heat-killed organisms per cubic centimeter: *Staphylococcus aureus* and *Staphylococcus albus*, of each 1 billion; streptococcus, pneumococcus, *Micrococcus catarrhalis*, Friedländer's bacillus and influenza bacillus, of each 400 million. This vaccine was administered subcutaneously as follows:

1. The first dose was 0.1 cc.; for students who had no reactions of consequence to the vaccine the second to the fifth doses inclusive were increased 0.1 cc. each at weekly intervals; the sixth and seventh doses were increased 0.25 cc. each at two week intervals, and thereafter 1 cc. was continued every two weeks throughout the season.

2. For students who had moderately severe local reactions to the vaccine, the dosage was not increased beyond that which produced the reaction, but this particular dosage was continued at two week intervals throughout the season.

3. For students who had severe local reactions or moderately severe general reactions to the vaccine, the dosage was decreased to the largest dose which did not produce a reaction, and this was continued throughout the season.

The control group, the members of which believed that they were receiving vaccine, were given hypodermic injections of sterile physiologic solution of sodium chloride at the same intervals that the experimental groups received the vaccine.

RESULTS

The accompanying table presents a summary of the results reported by students who participated in this study. Ninety-two students, 77.3 per cent, of the experimental group and eighty-eight students, 83 per cent, of the control group continued to the end of the experimental period. There was a greater loss of subjects in the experimental group than in the control group and, according to their own statements, this was due primarily to the reactions from the vaccine.

The uniformity in the average number of colds which the students in these two groups reported having had during the previous year would indicate that the

groups were well equated so far as susceptibility to colds is concerned.

During the year of the study the persons who received the vaccine reported an average of 2.1 colds per person. This is a reduction of 55 per cent from the average of 4.7 colds which these same students reported that they had had during the year prior to the study. This is as great a reduction as has been reported in most of the studies which conclude that these vaccines are of value. However, our control group, who received only physiologic solution of sodium chloride, reported an average of only 1.9 colds during the year of the study, a reduction of 61 per cent from the average of 4.9 colds which was reported for the previous year. From these figures it is apparent that there is no evidence in this study that the vaccine had any influence on the average number of colds suffered per person.

Of the other data shown in this table, the only difference between the groups which seems to be of significance is in the percentage of persons reporting reactions to the vaccination. This shows a very real difference between the two groups. Many of the students who received the vaccine reported quite severe reactions.

CONCLUSIONS

A carefully controlled study of the traditional heat-killed bacterial vaccine for the common cold reveals no evidence that it is of value in a group of cold-susceptible students at the University of Minnesota.

THE DIAGNOSIS OF ECHINOCOCCUS (HYDATID) DISEASE

BY IMMUNOLOGIC REACTIONS WITH SUBSTITUTE
TAENIA ANTIGENS

HARRY M. ROSE, M.D.

AND

JAMES T. CULBERTSON, Ph.D.

NEW YORK

Echinococcus disease has never been common in the United States, and the case incidence has decreased considerably since the restriction of immigration in 1924. Nevertheless, this relatively rare disorder continues to be seen with sufficient frequency to warrant consideration, particularly since diagnosis by the usual clinical and laboratory procedures is almost always difficult and uncertain.

The diagnosis of echinococcus disease may be greatly facilitated by employing immunologic procedures such as the cutaneous test described by Casoni¹ or the complement fixation reaction of Ghedini² and Weinberg.³ Neither of these important diagnostic aids has, however, been used to any great extent in this country for the reason that hydatid fluid, which is used as the antigen, is generally unavailable.

In the present report some of the salient features of echinococcus disease are reviewed, and readily available antigens are described which may be substituted for hydatid fluid in performing the Casoni or Ghedini-Weinberg tests.

From the Departments of Medicine and of Bacteriology, Columbia University College of Physicians and Surgeons.

1. Casoni, T.: The Biologic Diagnosis of Echinococcus Disease in Human Beings by Means of the Intradermal Reaction, *Folia clin., chim. et micro.* 4: 5-16, 1911.

2. Ghedini, G.: Studies on the Blood Serum of Individuals Affected with Hydatid Cysts, and on the Liquid Contained in These Cysts, *Gaz. d. osp.* 27: 1616-1617, 1906.

3. Weinberg, M.: The Serodiagnosis of Echinococcus Disease, *Ann. de l'Inst. Pasteur* 23: 472-502, 1909.

2. This vaccine was supplied through the courtesy of Dr. R. K. Cutter, Cutter Laboratories, Berkeley, Calif.

LIFE CYCLE OF THE PARASITE⁴

Hydatid disease is caused by infestation with the larval stage of a cestode, *Echinococcus granulosus*.⁵ The definitive hosts of this parasite are dogs, wolves and jackals. The adult tapeworms inhabit the intestine of these carnivora, and eggs shed from the gravid proglottids are passed in the feces. Water or vegetation contaminated with infested fecal material may then be ingested by herbivora, usually sheep or cattle, in whose alimentary canals the eggs hatch and deliver hexacanth embryos. These larvae penetrate the intestinal wall and enter the portal circulation, whence they are carried to the liver. Most of the larvae are arrested by the hepatic filter, but not infrequently a few pass through and lodge within the lungs. More rarely still the parasites reach the general circulation and are carried into the brain, bones, kidney, spleen and other organs.

In the tissues where larvae remain viable the characteristic hydatid cysts slowly develop. These cysts are composed of a cuticle of host tissue and an inner germinative membrane from which embryonal tapeworms (scolices) develop in large numbers. Daughter cysts may form by budding from this membrane. Normal cysts are filled with limpid hydatid fluid.

To perpetuate the life cycle of the parasite, the definitive hosts must become infested with the adult worms by ingesting cysts which contain viable scolices. Opportunities for such infestation occur frequently in foreign regions where sheep and cattle are raised in large numbers, and where the offal of slaughtered animals is fed indiscriminately to dogs. The scolices, when swallowed by the dog, evaginate and attach themselves to the intestinal wall by means of their hooklets. Here they again develop into adult, gravid forms.

Hydatid infestation in man, just as in the herbivorous animal, results from the ingestion of eggs passed in the feces of a definitive host. The distribution and evolution of cysts within the human body are similar in all respects. The only considerable difference between hydatid disease in man, as compared with other animals, is that the cysts usually attain a larger size in the human host.

INCIDENCE AND DISTRIBUTION

The incidence of hyatid disease in the United States has never been accurately determined, but Magath⁶ states that less than 500 cases of the disease were reported in the medical literature of North America between 1880 and 1936. When patients suffering from echinococcus disease are seen in this country, they are almost invariably found to be immigrants from world areas where the disease is endemic. The majority of the patients are natives of Italy, Greece, Germany, Russia, Poland or Turkey, and echinococcus disease is most common in those sections of the United States which have been heavily settled by these nationalities. Although the world incidence of hydatid disease is highest in Australia, New Zealand, Uruguay and Argentina, the number of immigrants from these countries has been relatively small and they have not contributed appreciably to the incidence of the disease in North America.

There are no significant endemic foci of echinococcus disease in the United States, and less than twenty-five human cases have been reported in which the infestation is believed to have been contracted in this country.

Consequently, the possibility of echinococcus disease may be practically excluded in any person who has resided in the United States from birth. Although Riley⁷ has recently reported that a cycle of infestation with *Echinococcus granulosus* exists among moose and timber wolves in Minnesota, such a focus of infestation would not seem likely to be of consequence as regards a considerable extension of the disease to man or other animals. Furthermore, the low incidence of hydatid cysts found in sheep, cattle and hogs on this continent,⁸ together with the fact that dogs rarely have access to the viscera of slaughtered animals, also makes it unlikely that hydatid disease in our native population will ever increase significantly.

CLINICAL DIAGNOSIS

The diagnosis of echinococcus disease by means of routine clinical and laboratory methods is usually difficult. It is important to bear in mind the natural distribution of cysts, well illustrated by table 1 (from Dévé⁹).

Since the liver and lungs are predominantly involved, echinococcus disease becomes a problem chiefly in the differential diagnosis of abdominal and pulmonary disorders. The symptomatology is in no way characteristic, and the disease may readily simulate hepatic cirrhosis, cholecystitis and cholelithiasis, abscesses of the liver

TABLE 1.—Location of 2,700 Cysts Found in Human Beings

Site	Percentage
Liver.....	76.6
Lung.....	9.4
Muscles and cellular tissues.....	5.2
Kidney.....	2.3
Spleen.....	2.1
Bones.....	0.9
Brain.....	0.6
Miscellaneous.....	2.4

and lungs and various new growths arising in the chest or abdomen. For a complete discussion of clinical manifestations the reader is referred to the articles of Dew¹⁰ and Godfrey.¹¹

Rupture of cysts occurs not infrequently and may be followed by severe or even fatal anaphylactic reactions. Ruptured cysts of the liver, as well as of the lungs, may discharge their contents through the bronchi, in which case "grape skins" or the characteristic hooklets may appear in the sputum.

Old, degenerated cysts frequently undergo calcification, in which case they may be readily detected by x-ray examination and present a typical appearance.

Eosinophilia is found in only 20 to 25 per cent of cases.

IMMUNOLOGIC REACTIONS IN DIAGNOSIS

The cutaneous test of Casoni¹ and the complement fixation reaction of Ghedini² and Weinberg³ are generally recognized as almost indispensable aids in the diagnosis of echinococcus disease. These tests each utilize hydatid fluid as antigen and are commonly supposed to be specific. The Casoni test consists of the intradermal injection of from 0.1 to 0.5 cc. of pheno-

4. Faust, E. C.: Human Helminthology, ed. 2, Philadelphia, Lea & Febiger, 1939, pp. 322-330.

5. Nomenclature of the helminths referred to in this article is according to Monnig, H. O.: Veterinary Helminthology and Entomology, London, Baillière, Tindall & Cox, 1934.

6. Magath, T. B.: Hydatid (*Echinococcus*) Disease in Canada and the United States, *Am. J. Hyg.* 25: 107-134 (Jan.) 1937.

7. Riley, W. A.: Maintenance of *Echinococcus* in the United States, *J. Am. Vet. M. A.* 95: 170-172 (Aug.) 1939.

8. Schwartz, Benjamin: Zoological Problems Relative to Meat Inspection and Their Bearing on Public Health, *Am. J. Pub. Health* 29: 1133-1139 (Oct.) 1939.

9. Dévé, F.: The Localization of *Echinococcus* in the Human, *Compt. rend. Soc. de biol.* 74: 735-736, 1913.

10. Dew, H. R.: Hydatid Disease: Its Pathology, Diagnosis and Treatment, Sydney, Australasian Medical Publishing Company, Ltd., 1928.

11. Godfrey, M. F.: Hydatid Disease: Clinical, Laboratory and Roentgenographic Observations, *Arch. Int. Med.* 60: 783-804 (Nov.) 1937.

lated hydatid fluid, which provokes allergic reactions of the immediate "wheal and flare" type in the majority of persons suffering from hydatid disease. The Ghedini-Weinberg test is carried out in the same manner as the Wassermann reaction. Fairley and Kellaway,¹² who have had extensive experience with both of these procedures in Australia, obtained positive reactions in about 85 per cent of proved cases. These authors consider the cutaneous test to be somewhat more sensitive than the complement fixation reaction.

While both cutaneous testing and complement fixation are widely employed in countries where echinococcus disease is common, neither has been employed in the United States to any extent because of the scarcity of hydatid fluid. Not only is hydatid fluid difficult to obtain,⁸ but different samples show wide variation in antigenic potency, while all specimens deteriorate more or less rapidly even though carefully preserved.

The observations of Morenas¹³ and Outeiriño¹⁴ and more recently those of Chung and Tung¹⁵ suggest that

SOURCE AND PREPARATION OF ANTIGENS

Cysticercus pisiformis is the larval stage of the dog tapeworm *Taenia serrata* and occurs naturally in the rabbit. From 10 to 50 per cent of stock laboratory rabbits are found to be infected with this parasite. The older animals show the higher incidence of infestation. The cysts are usually found in the omentum, about the gastrohepatic ligament or at the root of the mesentery.

The abdomens of healthy adult rabbits are opened with sterile precautions and searched for cysts. When these are found they are removed to Petri dishes, where the adventitial envelope, which is composed of rabbit tissue, is teased away with sterile dissecting needles to deliver the larvae. Ten or twelve of the larvae are triturated in a sterile mortar with 5 cc. of physiologic solution of sodium chloride containing 0.5 per cent phenol. The resulting suspension is allowed to extract for two hours at 37 C. The material is then centrifuged at high speed until no more sedimentation occurs. The supernatant fluid is pipetted off and portions are cultured aerobically

TABLE 2.—Cutaneous Tests of Patients with Hydatid Disease

Patient	Nationality	Age	Sex	Location of Cysts	Condition of Cysts	Reactions to Antigens*		
						<i>Cysticercus</i> <i>Pisiformis</i>	<i>Taenia</i> <i>Taeniaeformis</i>	Hydatid Fluid
E. D.	Greek	33	♀	Liver	Cyst recently removed	++++	.....	++++
P. A.	Italian	33	♂	Liver	Cyst recently removed	++++	.....	+++
R. L.	Italian	39	♀	Liver Lungs	Cyst previously removed Recurrent cysts	++++	.....	+++
L. T.	Italian	55	♂	Liver Peritoneum	Cyst previously removed Recurrent cysts	++++	.....	+++
A. A.	Italian	59	♀	Liver Peritoneum	Cyst previously removed Recurrent cysts	++++	.....	+++
L. B.	Greek	30	♀	Liver Lungs	Recent rupture of cyst	++++	++++	+++
W. H.	U. S. A.	41	♂	Liver	Probable rupture of cyst	++++	++++	++++
K. M.	Greek	46	♀	Liver	Cyst recently removed	.....	++++	.....
G. R.	U. S. A.	56	♀	Liver	Recent suppuration of cyst	.....	++++	.....
L. S.	Greek	50	♂	Liver	Recent suppuration of cyst	.....	++++	.....
M. G.	Italian	..	♀	Liver	Uncomplicated cyst	.....	++	.....
H. L.	Czech	59	♀	Liver	Calcified cyst	++	.....	.....
J. G.	Italian	35	♀	Liver	Calcified cyst	....	Negative	.....
S. N.	Arabian	45	♂	Liver	Calcified cyst	....	Negative	.....

* Intensity of reactions was interpreted according to the size of the cutaneous wheal at twenty minutes, as follows: 1.0 cm. or smaller, negative; from 1.1 to 1.4 cm., +; from 1.5 to 1.9 cm., ++; from 2.0 to 2.4 cm., +++, and 2.5 cm. or larger, +++++.

the Casoni and Ghedini-Weinberg reactions are not species specific, as was formerly supposed, but are actually group specific. These investigators obtained allergic cutaneous tests and positive complement fixation reactions in known cases of hydatid disease when antigens prepared from other cestodes were substituted for hydatid fluid. In a previous communication¹⁶ we reported similar results in four cases of echinococcus disease in which cutaneous tests were made with a saline extract of the common rabbit cestode *Cysticercus pisiformis*. Further experiences obtained with this rabbit *cysticercus* extract, and observations on the use of a new antigen prepared from *Taenia taeniaeformis*, indicate that these antigens may be used as substitutes for hydatid fluid in the Casoni and Ghedini-Weinberg tests.

12. Fairley, K. D., and Kellaway, C. N.: The Value of Laboratory Investigations in the Diagnosis of Hydatid Infestation, Australian & New Zealand J. Surg. 2: 236-243 (Jan.) 1933.

13. Morenas, L.: Utilization of *Cysticercus* Fluid as an Antigen for the Casoni Reaction, Compt. rend. Soc. de biol. 110: 321-322 (June 3) 1932.

14. Outeiriño, J.: Studies on the Supposed Specificity of the Ghedini-Weinberg and Casoni Reactions in the Diagnosis of Human Echinococcus Disease, Ann. de med. 38: 493-509 (Dec.) 1935.

15. Chung, Hui-Lan, and Tung, Tsun: The Nonspecificity of the So-Called Specific Biologic Tests for Hydatid Disease, Tr. Roy. Soc. Trop. Med. & Hyg. 32: 697-706 (April) 1939.

16. Rose, H. M., and Culbertson, J. T.: Diagnosis of Echinococcal (Hydatid) Disease in Man by Intradermal Reaction to Rabbit *Cysticercus* Antigen, Proc. Soc. Exper. Biol. & Med. 41: 426-428 (June) 1939.

and anaerobically to determine sterility. The final product is a faintly opalescent liquid which does not settle out on standing and which contains approximately 75 mg. of nitrogen per hundred cubic centimeters. If the solution as originally prepared is found to be contaminated, it may be sterilized by the Arnold method.

Taenia taeniaeformis is an adult tapeworm found in the intestine of cats and is very common in this animal. The worms may be readily procured in laboratories where cats are maintained as stock animals.

The worms are washed thoroughly in running water, after which 0.5 Gm. of moist worm is triturated with 5 cc. of phenolated saline solution and the extract completed by the method already described for *Cysticercus pisiformis*.

The antigens thus prepared may be conveniently dispensed in ampules containing one cutaneous test dose and may be stored at least six months without loss of potency.

CUTANEOUS TESTS WITH SUBSTITUTE ANTIGENS IN PATIENTS WITH ECHINOCOCCUS DISEASE

Cutaneous tests have been performed on fourteen patients¹⁷ suffering from echinococcus disease, of whom

17. Assistance was given by Dr. Allen O. Whipple, Dr. Tasker Howard, Dr. C. F. Warren and Dr. C. F. E. Blunck, New York; Dr. John F. Kessel, Los Angeles, and Dr. O. R. McCoy, Rochester, N. Y.

nine were women and five were men. The patients ranged from 30 to 59 years of age. Twelve of the cases occurred in natives of foreign countries where hydatid disease is endemic, while both of the remaining patients, although born in the United States, had resided for considerable periods of time in either Argentina or Australia.

Echinococcus cysts of the liver were present in all of the fourteen patients. Pulmonary cysts were also demonstrated in two of the cases, and cysts of the peritoneal cavity were found in two others.

The cutaneous tests were carried out by injecting 0.1 cc. of the antigens intradermally on the volar surfaces of the forearms. Positive reactions (shown in the illustration) were characterized by wheals, which began to form in less than five minutes and reached their maximal size in from fifteen to thirty minutes. The wheals varied in size from 1.5 to 5.4 cm. in diameter, with pronounced pseudopodia, and were surrounded by zones of erythema from 5 to 15 cm. in diameter. The patients usually complained of more or less severe itching at the sites of the reactions. Fading of the reactions was complete in about twelve hours, although some residual induration usually persisted from twenty-four to thirty-six hours.

Control cutaneous tests with the antigens were performed on ten normal men and ten normal women and also on a series of twenty-five patients suffering from various nonparasitic pulmonary and abdominal disorders. The reactions in the controls were invariably negative, with cutaneous wheals not exceeding 1 cm. in diameter, no pseudopod formation and no residual induration at the sites of inoculation.

The results of the cutaneous tests of the patients with echinococcus disease are summarized in table 2. Strongly positive immediate reactions were obtained in ten cases, in five of which cutaneous tests were made with *Cysticercus pisiformis* antigen, in three with *Taenia taeniaeformis* antigen and in two with both antigens. The cutaneous wheals in these ten cases varied from 2.5 to 5.4 cm. in diameter, and all of the reactions were considered to be 4 plus.

Positive cutaneous reactions of moderate intensity were obtained in two cases, in one of which *Cysticercus pisiformis* antigen was used for testing and in the other *Taenia taeniaeformis* antigen. The cutaneous wheals in each of these cases were 1.5 cm. in diameter, and the reactions were read as 2 plus. In the remaining two cases, in both of which tests were made with *Taenia taeniaeformis* antigen, the wheals failed to exceed 1 cm. in diameter and the reactions were obviously negative.

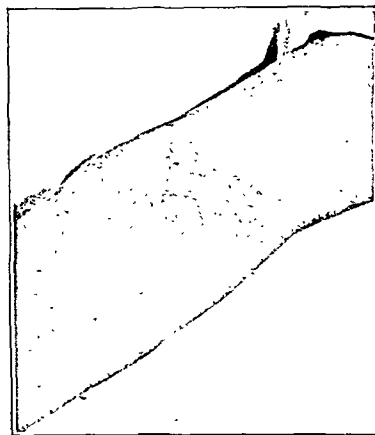
Seven of the fourteen patients, all of whom gave strongly positive reactions with the *Cysticercus pisiformis* antigen, were also given cutaneous tests with hydatid fluid obtained from a fertile human cyst. The reactions obtained with the hydatid fluid were in each case somewhat less vigorous than those obtained with the substitute antigen, the wheals ranging from 2 to 3.5 cm. in diameter. The explanation for the less intense reactions obtained with hydatid fluid, as compared with those produced by the substitute antigen, is undoubtedly that the concentration of antigen in the hydatid fluid was lower than in the saline extract of *Cysticercus pisiformis*.

The results of the cutaneous tests in this series of fourteen patients indicate not only that positive reactions may be elicited by substitute antigens but also that a patient's cutaneous reactivity depends to a con-

siderable degree on the status of his disease. Thus all the strongly positive cutaneous reactions were observed in individuals who had had cysts previously removed or in whom rupture or suppuration of the cysts had occurred. The patient with uncomplicated cysts gave only a moderately positive reaction, as did one of the patients with calcified cysts, while the reactions of the other two patients with calcified cysts were completely negative. These observations agree with those of Fairley and Kellaway,¹² who reported that the Casoni test was frequently negative in patients with degenerated, calcified cysts and that patients with uncomplicated cysts frequently had cutaneous reactions of less intensity than those in whom suppuration, leakage or actual rupture of the cysts had taken place.^{17a}

COMPLEMENT FIXATION REACTIONS WITH SUBSTITUTE ANTIGENS

Tests¹⁸ made thus far indicate that the substitute antigens already described may be employed in the complement fixation reaction for echinococcus disease, as well as in the cutaneous test. The serums in seven proved cases of hydatid disease have been examined by this method with the saline extract of *Taenia taeniaeformis* as one of the antigens, in addition to three specimens of hydatid fluid from cysts of hog, sheep and man. The results of the tests, including those obtained with three control serums, are shown in table 3. When the substitute antigen was used, complete fixation of complement



Typical cutaneous reaction in a patient with echinococcus disease following the intradermal injection of 0.1 cc. of an antigen prepared from *Cysticercus pisiformis*.

was obtained with the serums of six patients and strong fixation with the serum of the remaining patient. These results compare with those obtained with the hog hydatid fluid and are superior to those found with the other two hydatid antigens. Anticomplementary action was not observed with any of the antigens.

COMMENT

Taxonomically, *Cysticercus pisiformis* and *Taenia taeniaeformis* are closely related to *Echinococcus granulosus*, since all are cestodes of the family Taeniidae. The results of this investigation indicate that these parasites bear a close antigenic as well as morphologic relationship and confirm similar observations which have been reported by Chung and T'ung,¹⁵ Morenas¹³ and Outeriño.¹⁴

The Casoni and Ghedini-Weinberg reactions are apparently group specific, rather than species specific, and the antigens which we have described may therefore be substituted for the hydatid fluid commonly supposed to be required for these tests. These substitute antigens

17a. We have recently observed an additional patient with uncomplicated hydatid cysts of the liver, in whom 4 plus cutaneous reactions were obtained with both antigens.

18. Dr. Annis E. Thomson, of the New York City Department of Health, performed these tests.

are easy to prepare and are readily available, in contrast to hydatid fluid, which is difficult to obtain in this country.

Because of the group specificity of these reactions, tests performed with *Taenia* antigens may be expected to yield positive results in all types of tapeworm infestations in man. This has actually been shown to be the case for *Taenia saginata* by Outeiriño and for *Taenia solium* by Chung and Tung. However, echinococcus disease is the only common *Taenia* infestation in which the human being plays host to the larval stage of the

TABLE 3.—Complement Fixation Tests for Hydatid Disease *

Patients	Antigens				
	Human Hydatid	Hog Liver Hydatid	Sheep Lung Hydatid	<i>Taenia</i> Taeniae-formis Extract	
L. G.	+++	+++	Negative	+++	
R. L.	++++	++++	+	++++	
P. A.	+	++++	±	++++	
E. D.	++++	++++	++++	++++	
K. M.	++	+++	++	++++	
W. H.	++++	++++	++++	++++	
A. M.	+++	++++	++++	++++	
Controls					
E. P.	Negative	Negative	Negative	Negative	
Cross	Negative	Negative	Negative	Negative	
J. R.	Negative	Negative	Negative	Negative	

* The complement fixation tests were carried out with the usual Wassermann technic. Details of the procedure are omitted for the sake of brevity.

parasite, and infestation with the intestinal forms of taenias may be ruled out by careful stool examinations. Such examinations of the stools have been made in the cases of hydatid disease which we have already reported.

Positive cutaneous reactions were elicited with substitute *Taenia* antigens in twelve out of fourteen cases of echinococcus disease. The incidence of positive reactions is thus 85 per cent, which is similar to the results obtained by Fairley and Kellaway¹² with the classic Casoni test. The results of complement fixation tests with the serums of seven patients with known hydatid disease also furnish evidence that immunologic reactions for the diagnosis of this disease may be obtained as readily with substitute *Taenia* antigens as with hydatid fluid itself.

SUMMARY

- 1. Cutaneous tests with substitute antigens were performed on fourteen patients with echinococcus disease. Complement fixation tests were made on seven patients.
- 2. The group specificity of the Casoni and the Ghedini-Weinberg reactions was confirmed.
- 3. Readily available antigens may be substituted for hydatid fluid in either the cutaneous test or the complement fixation reaction for the diagnosis of hydatid disease.

Bad Habits Live on Dividends.—A child never clings to any habit, either in actions or in emotions, unless the habit brings a gratifying reward. . . . How long will a healthy baby hold to the habit of crying at night? Only as long as he "feels" that crying means being picked up, or being fed, or getting some other special attention. . . . How long will a child continue to have tantrums? As long as he feels that a tantrum will produce a slice of cake, the achievement of some other desire, or the reversal of some unpleasant parental command.—Hohman, Leslie B., *As the Twig is Bent*, New York, Macmillan Company, 1940.

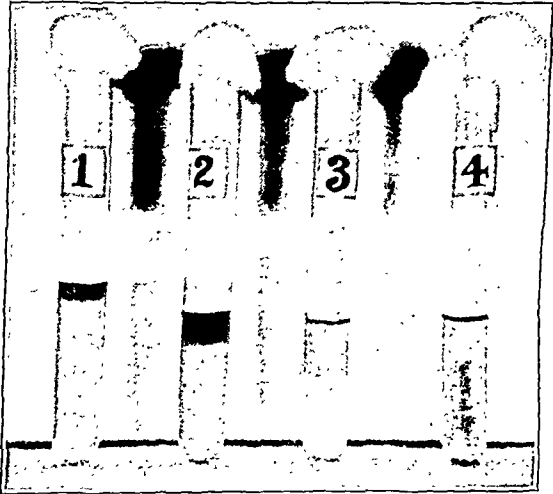
Clinical Notes, Suggestions and New Instruments

CLEAR LIQUID MEDIUMS FOR THE "AEROBIC" CULTIVATION OF ANAEROBES

JOHN H. BREWER, PH.D., BALTIMORE

Anaerobic organisms are often overlooked in clinical and biologic laboratories because of the lack of a simple anaerobic medium which can be used just as any aerobic broth without the use of anaerobe jars or other special equipment or technics. It is well known that most clear liquid mediums when heated to drive out the air will be anaerobic for a short time. Whether this period is long enough to allow germination of the spores or growth of the anaerobes present depends on the composition of the medium, the amount of aeration while inoculating and several other factors. For most purposes the period of anaerobiosis obtainable in this manner is not sufficient. To avoid the use of mechanical devices such as the marble seal, special tubes or layers of oil or petrolatum, various substances have been added in attempts to prolong the anaerobiosis and still have a clear liquid medium which can be used like any aerobic broth.

Many clear liquid mediums have been suggested for the cultivation of anaerobes in open tubes. Most of these have been dependent on the addition of some compound containing the SH group for lowering the oxidation reduction potential. Among those suggesting such mediums were Trenkmann¹



Tube 1, the medium one week after sterilization. The darkened layer at the surface shows the aerobic portion of medium; the rest of the tube is anaerobic. Tube 2, the medium one month old. Note that, although evaporation rings are visible, the greater portion of the medium is still anaerobic. Tube 3, Uschinsky's synthetic medium containing 0.1 per cent sodium thioglycollate and the Eh indicator. (Medium at one week after sterilization). Tube 4, Uschinsky's medium containing no sodium thioglycollate (one week).

using alkaline sulfides, Berthelot² pyruvic acid, Hosoya³ cysteine and Quastel and Stephenson⁴ cysteine, glutathione and thioglycollic acid. Aubertin, Aubel and G  nevois⁵ confirmed

From the Bacteriological Laboratory, Hynson, Westcott & Dunning, Inc. Presented at the forty-first general meeting of the Society of American Bacteriologists, New Haven, Conn., Dec. 28, 1939.
1. Trenkmann: Das Wachstum der Anaeroben Bakterien, Central. f. Bakt., 1 Abt. 23: 1038-1043, 1087-1090, 1898.
2. Berthelot, A.: Recherches sur l'acide pyruvique consid  r   comme facteur d'ana  robiose, Compt. rend. Acad. d. sc. 176: 1929-1932, 1923.
3. Hosoya, S.: A New Method for the Cultivation of Anaerobic Bacilli, Tokyo Imp. Univ., Sc. Reps. Gov. Inst. for Infect. Dis. 4: 123-128, 1925.
4. Quastel, J. H., and Stephenson, Marjory: Experiments on "Strict" Anaerobes: I. The Relationship of B. Sporogenes to Oxygen, Biochem. J. 20: 1125-1137, 1926.
5. Aubertin, E.; Aubel, E., and G  nevois, L.: A propos de la culture des ana  robies stricts en milieu a  robie, Compt. rend. Soc. de biol. 98: 957-959 (April 17) 1928.

the work of the others and added several thio acids to the list. These mediums have not been generally accepted for various reasons. In order to get growth in most of them it is necessary to inoculate very soon after sterilization; in others, some of the components must be added aseptically just before use, and in still others the ingredients are expensive and difficult to prepare. The greatest handicap to the general acceptance of

Sodium Thioglycollate Medium

	Per Cent
Pork infusion solids.....	1
Peptone (thio)	1
Sodium chloride	0.5
Sodium thioglycollate	0.1
Agar	0.05

these mediums has been their short duration of anaerobiosis. From three to four days is the maximum period that any of them will remain anaerobic; in most of them the period is only a few hours.

A medium which obviates these difficulties was devised without knowledge of the previous work with thioglycollic acid.

To the basic medium 1 per cent dextrose and 0.0002 per cent methylene blue were added, the dextrose to serve as an enrichment and the methylene blue as an oxidation reduction potential indicator. It has been found that this small dye concentration (1:500,000) is nontoxic and exhibits no bacteriostatic action against any of the many organisms employed. For some purposes the presence of 1 per cent dextrose is objectionable. In such cases the concentration may be reduced or the dextrose omitted entirely. Dextrose is of value in promoting the growth of many organisms and serves to prolong the anaerobiosis. Serum or ascitic fluid may be added to the medium aseptically if desired.

The medium was placed in 15 cc. amounts in 6 by three-fourths inch test tubes, making a column of medium 7 cm. high. It was then autoclaved for twenty minutes at 120 C. and stored at room temperature. (The medium should not be stored in a refrigerator, since a lower temperature increases the solubility of atmospheric gases and decreases the duration of the anaerobiosis.) Tubes of the medium were checked daily to determine the anaerobiosis and, except for a surface layer, the medium remained anaerobic for more than one month and supported growth from small inoculums of spores of some of the most strict anaerobes, including *Clostridium novyi*, *tetani*,

Anaerobiosis and Growth of *Clostridium Novyi* in a 70 Mm. Column of Medium

Medium	Time of Inoculation After Sterilization													
	1 Hour		24 Hours		48 Hours		72 Hours		1 Week		2 Weeks		1 Month	
	Mm. of Aeration	Growth of <i>Cl. Novyi</i>	Mm. of Aeration	Growth of <i>Cl. Novyi</i>	Mm. of Aeration	Growth of <i>Cl. Novyi</i>	Mm. of Aeration	Growth of <i>Cl. Novyi</i>	Mm. of Aeration	Growth of <i>Cl. Novyi</i>	Mm. of Aeration	Growth of <i>Cl. Novyi</i>	Mm. of Aeration	Growth of <i>Cl. Novyi</i>
Pork infusion broth.....	2*	1+	70†	—	70	—	70	—	70	—	70	—	70	—
Pork infusion broth + 1% dextrose.....	0	4+	70	—	70	—	70	—	70	—	70	—	70	—
Pork infusion broth + 0.05% agar.....	1	4+	10	4+	20	4+	22	4+	27	4+	32	4+	42	4+
Pork infusion broth + 1% dextrose + 0.05% agar.....	1	4+	6	4+	10	4+	15	4+	20	4+	25	4+	35	4+
Pork infusion broth with 0.1% sodium thioglycollate.....	0	4+	?	1+	?	1+	70	—	70	—	70	—	70	—
Pork infusion broth with 0.1% sodium thioglycollate + 1% dextrose	0	4+	0	4+	?	2+	70	—	70	—	70	—	70	—
Pork infusion broth with 0.1% sodium thioglycollate + 0.05% agar	1	4+	5	4+	8	4+	10	4+	12	4+	18	4+	25	4+
Pork infusion broth with 0.1% sodium thioglycollate + 1% dextrose + 0.05% agar.....	1	4+	4	4+	5	4+	8	4+	10	4+	15	4+	22	4+

* The entire tube was slightly colored, indicating partial aeration throughout medium.
† 70 mm. of aeration indicates entire tube aerobic.

In testing the sterility of ampules of sodium antimony thioglycollate it was noted that a medium containing methylene blue decolorized on the addition of this product. Since antimony compounds are known to be toxic to some organisms, a medium containing sodium thioglycollate was made. The basic formula is given in the accompanying list.

Hitchens,⁶ Spray,⁷ Falk⁸ and others have shown that small numbers of organisms grow much more readily if fractional percentages of agar are used and, since this medium was developed as a sterility test medium, 0.05 per cent agar was included. It is realized, of course, that even this small percentage of agar lessens convection currents, thereby prolonging the anaerobiosis obtained without noticeably affecting the fluidity of the medium.⁹ Several anaerobic mediums have been based on this principle.¹⁰

6. Hitchens, A. P.: Advantages of Culture Mediums Containing Small Percentages of Agar, *J. Infect. Dis.* 29: 390-407 (Oct.) 1921.

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septique, botulinum, welchii, sporogenes and several strains of anaerobic streptococci. In every case the growth was equivalent to that obtained in controls in anaerobic jars. It is not necessary to handle the medium with more care than is given the usual aerobic mediums. The tubes may be rotated after inoculation to distribute the inoculum and, although the medium will become colored, it clears in a few minutes except for the surface layer.

Some effort has been made to find an explanation for the seemingly reversible reaction taking place in the medium, but no definite conclusion has been reached. It has been found that 80 cc. of sterile air per minute can be bubbled through a tube of the medium for thirty minutes, and it will still support growth of *Clostridium novyi*, one of the most strict anaerobes.

Several mediums were prepared to determine the value of the different components in the medium from the standpoint of anaerobiosis. Results of these tests will be found in the accompanying table.

It was found that the same results could be obtained when thioglycollic acid was used instead of the sodium thioglycollate if the *pH* was readjusted. Thioglycollic acid is unstable after exposure to the air, so that it cannot be kept on hand very long without decomposition and, as Quastel and Stephenson have pointed out, it is a syrupy liquid and is difficult to handle. Sodium thioglycollate, on the other hand, is a relatively stable powder and may be readily weighed and dispensed.

To test the keeping qualities of such a medium, it was prepared in a dehydrated form for me by the Baltimore Biological Laboratory. Medium made from this powder, which had been kept several months, was found entirely satisfactory for the cultivation of the organisms previously mentioned.

A study has been made of the general utility of this medium. It is unnecessary to use Smith fermentation tubes or other special equipment. It need not be heated immediately before use and it has the advantage over a cooked meat or tissue medium that it is clear and that growth can be noted at once without staining. The sodium thioglycollate combines with and inactivates most of the mercurials used as preservatives, and one is much more likely to obtain growth from contaminated biologicals which are preserved with one of these highly bacteriostatic compounds. The anaerobiosis lasts much longer than the seven day incubation period required by the National Institute of Health for testing the sterility of biologic preparations or the fourteen day period required by the British Therapeutic Substances Act for catgut sutures and similar material. This medium might be called a facultative medium, since it supports not only growth of the most obligate clostridia but microaerophiles and aerobes as well.

A study of the utility of sodium thioglycollate for other bacteriologic purposes forms the basis for an additional publication.

NICOTINE POISONING IN A CHILD

RICHARD W. CRAGG, M.D., AND ARNOLD E. OSTERBERG, Ph.D.
ROCHESTER, MINN.

Nicotine is one of the most lethal poisons known to man. Some conception of its extreme toxicity may be gained by comparing it with hydrocyanic acid, which is of approximately equal potency. Nicotine is present in appreciable quantities in tobacco (ranging from 0.6 to 8 per cent),¹ the poorer grades containing relatively more than the better grades. Since tobacco is used so widely both for smoking and for chewing (including snuff), it is amazing that so few instances of fatal poisoning from nicotine have been recorded. As far as smoking is concerned, a possible explanation may be the destruction of the drug by combustion and also its expulsion with the smoke. Then too, marked tolerance acquired by the habitual use of tobacco is undoubtedly an important factor. Consequently, in a majority of instances nicotine poisoning among adults has been traced to the ingestion of some strong solution of the drug, usually an insecticide, and in the older literature it has been due to concentrated infusions made by boiling tobacco in water. On the other hand, children have no acquired tolerance to tobacco, as almost every male adult can distinctly recall. As a result, severe and even fatal poisoning may result from the smoking or chewing, and especially the swallowing, of tobacco in any form. Nevertheless the total number of reported cases of nicotine poisoning is small. Franke and Thomas² were able to find reports of only seventy and added four of their own, and Beeman and Hunter³ noted that through 1934 the Department of Commerce, U. S. Bureau of the Census, classified only 288 deaths as due to nicotine and its compounds. They also reported twenty-four cases from their own records. Moreover, the incidence among children has been even more rare; Willis⁴ was able to find only eight cases, including one which he himself observed. Of all forms in which nicotine has been ingested, tobacco in the form of snuff appears to have been the rarest cause of poisoning. We could find only two such reports. McNally¹ cited the case of Fontanelle, who in 1836 described the death of the French poet Santeul following the drinking of wine in which Spanish snuff had been placed.

Gonzales, Vance and Helpert (1937)⁵ stated that "death has occurred after swallowing 0.8 gram of snuff."

The case that we report is one in which snuff is believed to have been the poisonous agent and in which such a substance was ingested by a child.

REPORT OF CASE

A boy aged 4½ years, who had never been seriously ill, during the afternoon of November 19 was suddenly seized with a severe attack of nausea and vomiting, and his mother said that he "felt feverish." The symptoms partially abated after about an hour, but because he continued to show marked lassitude he was kept in bed and did not eat anything until noon of the following day. His parents did not recall that he even drank any water. By the following noon he felt better and for the first time drank some tea and orange juice. Approximately fifteen minutes after the ingestion of these liquids he was seized by a generalized tonic spasm. Opisthotonos was not present, but his mother said that "every muscle in his body was drawn tight." Following the onset of this convulsion, the breathing was at first very rapid and then ceased entirely. The spastic state continued uninterrupted until death intervened approximately twenty minutes later. As far as could be ascertained, cyanosis was present but its intensity was uncertain.

Necropsy was performed one and a half hours after death. The ventricles of the heart were markedly dilated, probably because of the asphyxial type of death. The stomach contained 30 cc. of thick yellow liquid and the mucous membrane was covered by a thick yellowish white coating, which could be scraped off only with great difficulty. The brain appeared edematous but its weight was within normal limits. An incidental finding of unusual interest was a very large polyp in the descending colon, which measured 3 by 1.7 by 1.5 cm. and was suspended on a pedicle 1.7 cm. long.

Microscopically, the wall of the stomach was the seat of marked inflammatory changes. There was a loss of almost all the specific secretory mucosal cells with replacement by masses of lymphocytes and reticular and fibrous tissue cells. The mucus producing cells appeared to be making feeble attempts at regeneration, and the muscularis mucosae was partially disorganized and moderately thickened. The surface of the mucosa was frankly necrotic and was covered by a heavy layer of fibrin and cellular debris in which were embedded lymphocytes and polymorphonuclear leukocytes. Microscopic sections of the polyp in the colon revealed masses of large columnar cells with hyperchromatic nuclei; the cells were piled up in great profusion. They were roughly arranged in papillary projections which extended out in all directions from a central stalk. The entire polyp had the appearance of a low grade carcinoma, but the hyperplastic changes were limited to the polyp itself and did not extend down the pedicle.

Since the child had been living on a small farm, we suspected that he might have swallowed some type of insecticide containing strychnine. The gastric contents were therefore analyzed by one of us (Osterberg) for this substance, but no trace of it was found. The remainder of the gastric contents was then extracted with ether from an alkaline solution and the presence of an alkaloid was determined qualitatively by the fact that precipitates were obtained with phosphomolybdic acid and potassium mercuric iodide. The residue from the evaporation of a portion of the ether had a slight odor of tobacco, which led to a further search for the possible presence of nicotine. This base was identified qualitatively by the fact that the residue yielded a positive test with Schindelmeyer's reagent of formaldehyde and nitric acid, a rose-red color being produced. Steam distillation of an additional aliquot of the ether extract yielded a precipitate with silicotungstic acid, which, while not a quantitative test, seemed to be conclusive evidence that we were dealing with nicotine. Quantitative measurements were not possible, but the strong positive evidence obtained by this analysis led us to postulate that the dose of nicotine was sufficient to be lethal.

From the Section on Pathologic Anatomy (Dr. Cragg) and the Section on Clinical Biochemistry (Dr. Osterberg), the Mayo Clinic.

1. McNally, W. D.: A Report of Five Cases of Poisoning by Nicotine, *J. Lab. & Clin. Med.* 5:213-217 (Jan.) 1920.

2. Franke, F. E., and Thomas, J. E.: Treatment of Acute Nicotine Poisoning, *J. A. M. A.* 106:507-512 (Feb. 15) 1936.

3. Beeman, J. A., and Hunter, W. C.: Fatal Nicotine Poisoning: A Report of Twenty-Four Cases, *Arch. Path.* 24:481-485 (Oct.) 1937.

4. Willis, H. W.: Acute Nicotine Poisoning: Report of a Case in a Child, *J. Pediat.* 10:65-68 (Jan.) 1937.

5. Gonzales, T. A.; Vance, Morgan, and Helpert, Milton: Legal Medicine and Toxicology, New York, D. Appleton-Century Company, Inc., 1937, p. 580.

With this substantial evidence at hand, confirmation was sought by further interviews with the child's parents. In many of the cases of nicotine poisoning recorded in the literature the poisoning has been due to some insecticide, usually "Black Leaf 40," which is a solution containing 40 per cent of nicotine sulfate. Such a substance might have been used on a farm, but the parents denied possession of a chemical spray of any kind. At this point the child's mother voluntarily remarked that two weeks before the onset of the last illness the boy had experienced a sudden attack of nausea and vomiting, and at that time he admitted that he had chewed the dregs scraped from a discarded box of snuff. Although she did not know definitely whether the child had eaten snuff again, she said that no other form of tobacco was used at home and, owing to the similarity of the two attacks of vomiting, she was certain that snuff must have been the causative agent. We therefore believe that we are warranted in assuming that snuff was the actual form in which the nicotine was ingested, even though absolute proof of this association was not obtainable.

COMMENT

The classic signs and symptoms of nicotine poisoning, as described by Cushny,⁶ are salivation, nausea and vomiting, rapid respirations, a slow pulse followed by a rapid pulse, mental confusion, muscular weakness, vertigo, loss of coordination and loss of consciousness. Later, clonic convulsions may occur; these may be followed by fibrillary muscular twitching and finally by tetanic spasm, with death due to arrested respiration. Sometimes the victim may pass quickly into a state of complete collapse with loss of all reflexes and without convulsions. That these symptoms may occur only in part or in any combination is attested by a large number of the reported cases. In most of them there was nearly always onset of nausea and vomiting. Mental confusion and loss of consciousness were most frequently observed in those cases in which some concentrated solution of the drug had been ingested. Franke and Thomas,² in experimenting with dogs, noted that when convulsions occurred they were tonic in type and death was caused by fixation of the respiratory muscles. Because our patient died before the arrival of a physician, we were unable to ascertain the state of the pulse, but the mother's story was very definite as to the sudden onset of nausea and vomiting, and in the first and final stages she noted that the child breathed rapidly. No mental confusion or loss of consciousness was observed until the terminal spasm twenty-four hours later, but muscular weakness was obvious throughout. The final convulsion was apparently tonic in type, and death probably resulted from fixation of the respiratory muscles. The fact that spasm did not develop immediately must mean that in the beginning only a part of the nicotine contained in the ingested snuff was absorbed. The next time that fluid was swallowed was twenty-four hours later, and at that time a generalized tonic spasm developed within twenty minutes, with fixation of the respiration and death. This sudden incident suggests that a large part of the snuff was retained in the stomach and that when the fluid was ingested one of two things occurred: either the nicotine was rapidly dissolved and absorbed in the stomach or the snuff was suddenly washed into the duodenum, where rapid absorption took place. It would be too presumptive to say that the inflammatory changes which were observed in the gastric mucosa interfered with the absorptive power of the stomach, but the possibility must be considered. The inflammatory changes were both acute and chronic, and we suspect that they may have resulted from the irritative action of the snuff, the chronic changes representing a healing stage of the irritation caused by the previous ingestion of this substance and the acute changes by the recent ingestion.

According to the published accounts,³ death caused by nicotine poisoning usually occurs within an hour of the time the poison is drunk and often within thirty minutes. However, the victims almost always swallowed some concentrated solution of the drug. On the other hand, those persons who were poisoned by weaker solutions of tobacco often reacted in a manner similar to our patient, by living a day or more. The Frenchman previously mentioned,¹ who drank wine containing snuff, lived three days.

In only one of the twenty-four cases reported by Beeman and Hunter³ did the poisoning result from an infusion of tobacco; this patient lived seven hours. Incidentally, they referred to the presence of hemorrhagic gastritis, which was found at necropsy in several of their cases. Price's⁷ patient was only 8 years old, and even though she drank an insecticide she lived three days. Price felt that the delay in the production of death was due to poor absorption. McNally¹ reported a case in which a young child died three days after blowing bubbles from an old tobacco pipe.

McNally stated that one cigar contains enough nicotine to kill two adults if injected directly into the circulation. He also quoted two instances in which people died within five minutes after eating between 1 and 2 ounces (30 to 60 Gm.) of tobacco. Another man died a few hours after taking an enema of water which had been previously boiled with 1 drachm (4 Gm.) of tobacco. Consequently it is obvious that if a child swallowed even a small amount of tobacco the result might readily be fatal. This undoubtedly explains why no gross tobacco particles were seen and no odor of tobacco was detected in the gastric contents of the child at the time of the necropsy.

SUMMARY

In the case of fatal poisoning which we have reported, evidence was obtained which circumstantially identified the fatal substance as snuff. Interesting postmortem observations, probably associated with the action of the poison, were acute and chronic inflammatory changes in the gastric mucosa. Another incidental finding of unusual note was a large polyp in the descending colon.

STAPHYLOCOCCUS AUREUS MENINGITIS SUCCESSFULLY
TREATED WITH SULFATHIAZOLE

FREDERICK W. DIETEL, M.D., CHURCHVILLE, N. Y.
AND
ALBERT D. KAISER, M.D., ROCHESTER, N. Y.

Staphylococcus aureus meningitis is an unusual type to occur in childhood, but when it does occur the mortality rate is high. In the few cases reported in the literature in which recovery has occurred, various methods of treatment had been employed. Since a new drug was used in the treatment of this case, it seems desirable to report it.

Norman M., aged 20 months, had no history of previous illnesses except for a furuncle on the upper lip several months before the present illness. The furuncle drained and healed, leaving a swelling the size of a small pea. Subsequent injury due to a fall causing a swelling about the lip and nose may have been the exciting cause of the present illness. A week following this slight injury on Feb. 18, 1940, the child became acutely ill with abdominal pain and distention and high fever. This was followed by drowsiness, rigidity of the neck and some vomiting. Lumbar puncture was performed on the third day of the illness. A thick, creamy looking spinal fluid was obtained which on smear and on culture showed hemolytic *Staphylococcus aureus* organisms. The blood culture taken on the third day showed the same organisms. There was no demonstrable focus of infection in the nose, throat or ears or in any other part of the body except the blood stream and meninges.

As soon as the bacteriology of the meningitis was established, medication was started. Sulfathiazole was administered by mouth through a stomach tube; 40 grains (2.6 Gm.) a day was given for nine days. Daily spinal punctures were performed with saline irrigations. Gradually the child improved, with a clearing of the spinal fluid and disappearance of the bacteria. At the end of three weeks there was complete recovery.

Numerous blood transfusions were given but no other drug was used. The sulfathiazole concentration of the blood never reached more than 3.5 mg. per hundred cubic centimeters of blood.

The only reactions to the drug were some vomiting and slight cyanosis. The child regained all his previous faculties and appeared to be entirely well two months after discharge from the hospital.

6. Cushny, A. R.: *A Textbook of Pharmacology and Therapeutics*, Philadelphia, Lea & Febiger, 1934, p. 335.

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Special Article**THE PHARMACOPEIA AND THE
PHYSICIAN****THE TREATMENT OF MALARIA**

ALFRED C. REED, M.D.

Professor of Tropical Medicine, University of California Medical School
SAN FRANCISCO

This is one of the second series of articles written by eminent authorities for the purpose of extending information concerning the official medicines. The twenty-four articles in this series have been planned and developed through the cooperation of the U. S. Pharmacopeial Committee of Revision and THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.—ED.

In spite of the prevalence and long history of malaria and in spite of fairly efficient drug agents, ideas of treatment are noteworthy for their variance and their number.

PRINCIPLES OF TREATMENT

Drugs used in the treatment of malaria fall into four groups, which are plasmochin, atabrine, direct cinchona derivatives and a miscellaneous group, largely ineffective, insufficiently tested, empirical, experimental and even dangerous. Plasmochin and atabrine are chemically derivatives of quinine but for clinical purposes can best be considered separately.

1. Plasmochin is a synthesized substance, essentially an amino-quinoline, with the formula stated as (n-diethylamino-isopentyl-8 amino-6 methoxychinolin). It should never be given in a dosage exceeding 0.065 Gm. (1 grain) by mouth each day to an adult weighing 150 pounds (69 Kg.). In the form of a tablet, a third of the daily dose (0.02 Gm.) is given by mouth three times a day. Toxic symptoms easily appear in the form of cyanosis, pallor, nausea, gastric pain, headache, vertigo, weakness and hemoglobinuria. These depend to a considerable degree on the production of methemoglobinemia.¹ With the appearance of any such symptoms, the drug should be discontinued at once.

Action on the plasmodia of malaria is very unequal. It does not kill sporozoites. It is relatively ineffective on the trophozoites, or growing forms, especially of *Plasmodium vivax* of tertian and of subtertian malaria. Its greatest usefulness is in the destruction of gametocytes, or sexual forms, in tertian and especially in subtertian malaria. It therefore becomes an adjuvant of particular value in endemic areas where it is important to prevent infection of mosquitoes. It is not desirable as a sole treatment but serves a useful and limited purpose as an adjuvant to quinine. Because of its high toxicity, patients receiving it should be under constant close medical supervision.

2. Atabrine is another synthetic drug which has fully proved its usefulness. It is essentially an amino-acridine derivative (dihydrochloride of 2-methoxy-6-chlor-9-amino acridine). The therapeutic dose by mouth is well below the toxic range, so that it is fairly safe. It frequently causes yellow pigmentation of the skin, which usually clears within two or three weeks. The results of long continued or repeated pigmentation have not been well evaluated. Its average dosage for an adult of 150 pounds is 0.1 Gm. (1½ grains) three times a day by mouth for from five to a maximum of seven days.

It does not kill sporozoites. Its greatest effectiveness is on the schizonts, or growing forms, of *Plasmodium falciparum* in malignant subtertian malaria. In benign tertian malaria its action is similar to that of quinine but the relapse rate is lower. While it has some effect on gametes of benign malaria, like quinine it is relatively less effective against subtertian gametes of sexual forms. It has been used in the form of atabrine musonate for intramuscular injection. In this case the dose is 0.375 Gm. given only twice. There seems to be much greater toxicity with this compound, and its use is indicated only under unusual epidemic conditions. Atabrine itself is a yellow powder which easily dissolves in warm saline solution and can be given, therefore, intramuscularly. Such use is not advised except under unusual conditions as, for instance, when a patient is unduly sensitive to quinine or is in coma or has pernicious vomiting. Atabrine can be given safely by mouth without close medical supervision. It is of definite value both alone and in alternation with quinine.

3. Cinchona alkaloids are numerous and in general all are antiplasmodial in action. Quinine is the only one to be considered under ordinary conditions. The extracted residue, after removal of most of the quinine, is known as cinchona febrifuge and fills a useful place when the cost of quinine is prohibitive, but the febrifuge is of variable composition and therapeutic value. It is not necessary to discuss the other cinchona alkaloids further here.

In selecting the particular salt of quinine to be used, a balance is necessary between cost and solubility. For injection, the quinine dihydrochloride, quinine and urea hydrochloride or urethane solution (discussed later) should be selected as the most soluble salts, even though they are more expensive. The dose intravenously should not exceed 0.5 Gm. and may well be 0.3 Gm. For oral administration the bisulfate or the sulfate are most eligible, combining fair solubility with moderate cost, although the quinine content is relatively low in the former. The sulfate is cheaper but less soluble. Tablets that are made up with sugar or certain other excipients are prone to become stony hard and may pass through the intestinal tract unchanged. To meet this difficulty it is often advisable to administer the quinine in solution (prescription 1).

PRESCRIPTION 1.—Quinine in Solution

Rx Quinine sulfate	0.3 Gm. (5 grains)
Aromatic sulfuric acid	0.4 cc. (6-8 drops)
Syrup of ginger, water, each in sufficient quantity	to make 4.0

Liquid prescriptions have the undesirable features of bitter taste, bulky content and difficulty of regular administration. For small children, however, they may be more usable than tablets or capsules. For a child the following method may be used: Dissolve a 5 grain (0.3 Gm.) tablet of quinine dihydrochloride in 4 teaspoonfuls (15 cc.) of water and add a little honey, syrup or jelly. One fourth of the solution contains 1¼ grains (0.08 Gm.) of the drug.

Capsules are not as desirable as tablets because they tend to melt in warm moist air and keep poorly. Plain tablet triturates of 5 grains (0.3 Gm.) each are best and should disintegrate quickly if dropped into a little water, although actual solution will not occur. Administration three times a day is much better than a single dose.

1. Bass, C. C.: Treatment of Malaria, with Some Reference to Recently Promoted New Remedies, J. A. M. A. 95:988-992 (Oct. 4) 1930.

Quinine does not kill sporozoites. It is largely ineffective against gametes of *Plasmodium falciparum* in malignant malaria. It is only partially effective against schizonts, or growing forms. It does not prevent relapses which will occur in from 25 to 50 per cent of cases, no matter what dosage is given. These deficiencies would suggest that the dosage must be large and long continued, and such has been the prevailing belief and practice until the past few years. But cinchonism easily appears with large or continued doses, and some patients are so susceptible that quinine cannot be used at all. Moreover, it is found that excessive dosage does not increase the clinical effectiveness of quinine. Long usage gives decreasing therapeutic efficiency. Altogether it is now felt by many that quinine should be used relatively late in the course of malaria, as it has been known for a long time that it is ineffective during the incubation period and most effective after the first paroxysm, and even later as the parasites and fever are both beginning to decline and in relapses.

The Malaria Commission of the Health Organization of the League of Nations² built on these observations in recommending that in patients who have good individual medical supervision, treatment should be short in duration and aimed only at controlling clinical manifestations of the first attack and relapses. This would allow maximal development of immunity and utilize it to the fullest. This advice, however, should not apply at any time to malignant or subtertian malaria. Here the clinical danger is so great and constant that eradication of parasites should be the goal at the earliest possible moment.

4. Miscellaneous drugs have been recommended. Three groups of these can be separated off at once from the field of specific medication:

(a) Epinephrine, ergot (and quinine), heat, cold douches, alcohol, purges and nonspecific proteins have been urged as provocatives in latent malaria to contract the spleen and cause the appearance of plasmodia in the circulating blood, allowing certainty of diagnosis. Such measures are usually ineffective, may be dangerous and should not be used.

Reference may be made to Ascoli's³ method of treatment with increasing intravenous doses of epinephrine, beginning with 0.01 mg. and increasing each day to $\frac{1}{500}$ mg., $\frac{1}{50}$ mg. and so on respectively until the daily dose is 0.1 mg. The last dose is repeated daily for twenty days. In case of unusual splenomegaly, the dose is further increased if well tolerated. Numerous reports indicating considerable success in reducing the spleen of chronic malaria have appeared. This reduction in size of spleen is accompanied by improvement in the anemia. Ascoli's method has been used extensively in conjunction with quinine treatment, with reported favorable effect on length of treatment and lowered relapse rate in chronic malaria.

(b) Iron and various arsenic compounds have been found useful in the treatment of malarial anemia. Sometimes these have mistakenly been assumed to have antiparasmodial action.

(c) Arsenic in the form of neoarsphenamine is frequently advised and does have a partial effect on schizonts, chiefly of *Plasmodium vivax*, if given during the attack. Its low therapeutic value and its definite dangers contraindicate its use.

(d) Sulfanilamide, of course, has received considerable favorable attention in clinical reports. Coggeshall⁴ reports a high rate of cure and prevention in *Plasmodium knowlesi* infections in rhesus monkeys. Chopra and Das Gupta⁵ obtained similar results in monkeys, presumably of the rhesus variety, and jumped to the conclusion, not warranted by their experimental work, that sulfanilamide compounds are effective specific drugs for malaria in man. Coggeshall⁶ properly warns against assuming therapeutic efficiency in man on the basis of the effect in monkeys. Various clinical reports of cure of human malaria have appeared, but attention must be called to the four cases reported by Faget, Palmer and Sherwood⁷ in which sulfanilamide was ineffective and attended by certain dangers. These cases were completely hospitalized and carefully controlled. Use of sulfanilamide compounds in human malaria cannot be recommended until much further carefully controlled experimental evidence is available on human malarial plasmodia.

In addition, an endless array of medicaments have received the credit of causing benefit and cure without any valid controlled experimentation and often with no conception of their toxicity. Careful toxicity studies on animals and exact determination of safe human dosage must be followed by carefully controlled human administration in a large number of cases before a new remedy can safely be accepted for clinical usage. Disregard of this fundamental rule of chemotherapy has often led to disastrous results.

OBJECTS OF TREATMENT

The physician must consciously determine for each patient what is to be the object of treatment. Environment, expected change to different environment, contiguity of anophelines, residence in an endemic area, need of prevention of infection of mosquitoes, need of personal prophylaxis temporarily as on an expedition or for a long period if in residence, concomitant diseases and conditions, as for instance, pregnancy, all seriously influence the kind and duration of treatment to be selected. Further modification must be made also in accord with the variety of plasmodium present, the age of the patient and whether the attack is initial or recurrent. As has been stated, no drug is known which will destroy sporozoites. Therefore, true prophylaxis is impossible under any conditions. At the most, symptoms can be delayed or prevented by a systematic attack on schizonts, or growing plasmodia. No drug is known which will accomplish a *therapia sterilisans magna*. Therefore a partial objective must be set.

Finally, careful consideration must be given to the problem of developing and maintaining immunity, which is at times the best of all treatments. This is difficult in the case of the malignant subtertian type because of the constant clinical danger while the patient harbors plasmodia. And still complete eradication of plasmodia seems to terminate immunity. The patient is undoubtedly safer at present, however, with every effort directed at early plasmodial cure. In benign tertian and quartan malaria, immunity can be cultivated at times with safety and advantage to the patient.

2. Therapeutics of Malaria: Third General Report of Malaria Commission, Quart. Bull., Health Organization of League of Nations 2:181 (June) 1933.

3. Ascoli, Maurizio, and Diliberto, Ugo: Therapy of Chronic Malarial Splenomegaly, South. M. J. 25:647 (June) 1932.

4. Coggeshall, L. T.: Prophylactic and Therapeutic Effect of Sulfonamide Compounds in Experimental Malaria, Proc. Soc. Exper. Biol. & Med. 38:768 (June) 1938.

5. Chopra, R. N., and Das Gupta, B. M.: A Note on the Therapeutic Efficiency of Sulfaseptazine in Simian Malaria (*Plasmodium knowlesi*), Indian M. Gaz. 73:395 (July) 1938.

6. Coggeshall, L. T.: Personal communication to the author. (This comment will appear without doubt in a forthcoming paper by Coggeshall in the American Journal of Tropical Medicine.)

7. Faget, G. H., Palmer, M. R., and Sherwood, R. O.: Unsuccessful Treatment of Malaria with Sulfonamide Compounds, Pub. Health Rep. 53:1364 (Aug. 5) 1938.

APPLIED TREATMENT

1. For the average acute attack, initial or relapse, it is recommended that the patient receive atabrine 0.1 Gm. ($1\frac{1}{2}$ grains) three times a day by mouth for one week. If the patient is not to be subjected to probable reinfection and pernicious symptoms are lacking in the case of benign tertian or quartan infection further treatment can be postponed until relapse occurs. In the case of subtertian or malignant malaria the atabrine course should be followed by quinine sulfate 1 Gm. (15 grains) in three divided doses after meals on four consecutive days each week for six weeks. Patients weighing more than 160 pounds (72.6 Kg.) should receive 1.3 Gm. (20 grains) each day. In acute malignant or subtertian malaria the daily adult dose may be increased to 2 Gm. (30 grains) daily for two or three days. Children usually tolerate quinine well and, up to 1 year of age, can be given from 0.065 to 0.10 Gm. (1 to $1\frac{1}{2}$ grains) a day. For children from 1 to 12 years of age the dose should be from 0.1 to 0.8 Gm. ($1\frac{1}{2}$ to 12 grains) increasing with age. A valuable form of quinine, which is practically tasteless, is quinine ethylcarbonate, of which the dosage is the same as for the sulfate.

The comparison of quinine salts in table 1 shows the percentages of quinine, which is of some importance in selecting the relative dosages.

Quinine (basic) is only very slightly bitter, slightly soluble and absorbs well.

TABLE 1.—Percentage of Quinine in Various Quinine Salts

	Per Cent of Quinine
Quinine hydrochloride	81.7
Quinine dihydrochloride	81.6
Quinine sulfate	73.5
Quinine bisulfate	59.0
Quinine tannate	30.0
Quinine ethylcarbonate, approximately	40.0
Quinine and urea hydrochloride	58.0-65.0

In the presence of pernicious vomiting, coma or evidence of nonabsorption of the drug, quinine dihydrochloride or quinine and urea hydrochloride, or quinine hydrochloride and ethyl carbamate should be given intravenously, 0.5 Gm. ($7\frac{1}{2}$ grains) being the maximum dose. The rate of injection must be extremely slow, not faster than 1 or 2 cc. a minute, and interrupted at any sign of collapse. Ampules of quinine hydrochloride 0.13 Gm. and ethyl carbamate (urethane) 0.065 Gm. in 1 cc. of sterile water are standardized in the National Formulary. Two such ampules can be given as a dose and repeated in from four to six hours. Quinine dihydrochloride is easily soluble but is acid and easily causes necrosis if the intravenous injection is too rapid or if the solution escapes from the vein. Quinine and urea hydrochloride is less acid in solution than the dihydrochloride. A few drops of epinephrine solution can be added to the intravenous dose with advantage. Ampules of these two salts are also recognized in the National Formulary. Subcutaneous injection should never be used, and an intramuscular injection is undesirable.

In case of known idiosyncrasy to quinine, and in cases of small children in whom oral administration is not possible, intramuscular injection of atabrine is desirable. Two injections are to be given twenty-four hours apart, each consisting of a freshly prepared solution of 0.1 Gm. of atabrine in 3 cc. of distilled water, or 0.3 Gm. in 9 cc. of distilled water. The solution must be prepared immediately before injection. The atabrine is supplied in sealed ampules containing 0.1 or 0.3 Gm. The single

dose for children should take into account the age as well as the general condition. Nocht and Mayer⁸ recommend Simeons' advice in treating large numbers of patients in India (table 2). The two intramuscular injections are followed by oral administration for an additional period of five days.

TABLE 2.—Dosage of Atabrine According to Age

Age	Dose
From 6 months to 2 years	Approximately 1 cc.
From 2 years to 4 years	Approximately 2 cc.
From 4 years to 6 years	Approximately 3 cc.
From 6 years to 10 years	Approximately 4 cc.
From 10 years to 12 years	Approximately 5 cc.
From 12 years to 15 years	Approximately 6 cc.
From 15 years to 18 years	Approximately 7 cc.
Healthy men	0.3 Gm. in 9 cc.
Healthy women and weaker men	8 cc.
Weak or sickly women	7 cc.

Intravenous injections of atabrine can be given with the same standard solution, 0.3 Gm. in 9 cc. of distilled water, in similar or smaller doses. Such administration is less desirable than intramuscular injection of atabrine. I do not recommend the use of atabrine musonate.

Plasmochin should be administered only when it is important to destroy gametocytes, especially of malignant or subtertian malaria. The dose should not exceed 0.02 Gm. by mouth three times a day after meals and should never be given on an empty stomach. This is continued for one week, provided no cyanosis or other symptoms of toxicity, such as abdominal pain, appear. Patients should be under constant medical observation. Atabrine should not be given at the same time as plasmochin. Plasmochin should never be used alone for treatment of malaria. It can be given coincidentally with quinine.

2. Symptomatic treatment is highly important. Bed rest is desirable. Purgation to the extent of keeping the bowels open is extremely valuable. Vomiting is often a distressing symptom and can be alleviated best by direct specific treatment. It may be lessened by carbonated waters or champagne, sweetened chloroform water, ice in the mouth and at times lavage.

PRESCRIPTION 2.—Iron and Arsenic Capsule

R _x Iron and ammonium citrate	0.25 Gm. (4 grains)
Carbarsone	0.065 Gm. (1 grain)
Quinine sulfate	0.03 Gm. ($\frac{1}{2}$ grain)
Mix and make one capsule.	
Label: One capsule after meals three times a day.	

Iron and arsenic preparations facilitate recovery from the anemia of malaria. Such a one as prescription 2 may be used.

Especially in children, sunbathing or ultraviolet treatments are valuable in late convalescence. Vigorous exercise, chilling, excitement, high altitudes, cold climates and all excesses must be avoided.

3. Chronic malaria and malarial cachexia constitute a difficult problem. Nocht and Mayer⁸ recommend a mixture of plasmochin and quinine sulfate for twenty-one days by mouth, three tablets after each meal. The dose for children from 1 to 5 years is one-half tablet once or twice a day and for those from 6 to 10 years one-half tablet three or four times a day. Each tablet contains 0.01 Gm. of plasmochin and 0.3 Gm. of quinine sulfate. This cannot be used in the presence of idiosyncrasy to quinine. Routine administration of quinine

8. Nocht, Bernhard, and Mayer, Martin: *Malaria, A Handbook of Treatment, Parasitology and Prevention*, ed. 2, London, John Bale Medical Publications, in German, translated into first English edition by Sir S. R. Christophers, 1937.

sulfate 0.3 Gm. (5 grains) two or three times a day for three or four days of each week can be continued for six weeks, in association with such a prescription as that for carbarsone, iron and ammonium citrate with caffeine citrate.

Splenectomy is often advised for malarial cachexia but authorities again do not agree.

4. Cinchonism is best treated by caffeine or coffee. Mild symptoms are common at the beginning of a course of quinine and require no treatment. In fact, lacking mild symptoms of cinchonism, one wonders whether the quinine is being well absorbed. It is often worth while to test sensitivity to quinine by giving a test dose of 0.6 Gm. (10 grains) before the subject goes to a malarial district. Some persisting fevers disappear at once if quinine is stopped, having been caused by the so-called paradoxical quinine fever. A hemorrhagic tendency may follow the use of quinine and may be distinguished with difficulty from hemorrhage due to malaria itself. The calcium level of the blood should be maintained by giving such a prescription as that for dicalcium phos-

PRESCRIPTION 3.—Iron and Arsenic with Caffeine Citrate

R̄ Carbarsone	0.065 Gm. (1 grain)
Iron and ammonium citrate.....	0.20 Gm. (3 grains)
Caffeine citrate	0.10 Gm. (1½ grains)
Mix and make one capsule.	
Label: Give one such capsule after meals three times a day.	

phate. Or 10 per cent calcium gluconate solutions, 10 cc. intravenously daily for from five to twenty days should be given. In all cases, atabrine must be promptly substituted for quinine if cinchonism appears.

5. In a case of pregnancy, miscarriage is prone to occur from malaria. Specific treatment should be adequately followed, as the possibility of stimulation of uterine contractions by quinine or other antimalarial drugs is much less than the probability of miscarriage from malaria.

6. Prophylaxis is another moot question with authorities. Since no known drug kills sporozoites, a true prophylaxis is impossible and the most to be accomplished is to limit or destroy schizonts, or growing forms of plasmodia. To this end various methods are in use. Quinine sulfate may be given, 0.3 Gm. (5 grains) daily or 1 Gm. (15 grains) in three or five divided doses, on one or two days of each week. Cinchonism and decreased antimalarial action often appear after long use

PRESCRIPTION 4.—Dicalcium Phosphate

R̄ Dicalcium phosphate	4 Gm.
Label: One teaspoonful twice a day, stirred up in a little water.	

of quinine. Atabrine may be given, 0.1 Gm. twice daily twice a week. Prophylaxis of this type is more apt to be useful on short trips than for those resident in endemic districts. The treatment should be continued for six weeks after termination of exposure.

FINAL NOTE

The reader is especially referred to the Fourth General Report of the Malaria Commission of the League of Nations Health Organization⁹ and to the small textbook by Nocht and Mayer,⁸ translated into English by Christophers.

350 Post Street.

9. Malaria Commission of League of Nations Health Organization: The Treatment of Malaria; Conclusions, *Am. J. Hygiene* 27: 390 (March) 1938.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING ARTICLE.

HOWARD A. CARTER, Secretary.

PHYSICAL THERAPY IN ARTHRITIS

WITH SPECIAL REFERENCE TO HOME TREATMENT

FRANK H. KRUSEN, M.D.

ROCHESTER, MINN.

There are three groups of physical measures which may be employed in the treatment of arthritis: The first includes the thermal measures (heat and cold), the second includes massage, manipulation and splintage, and the third includes exercise, postural training and rest.

Although physical treatment plays a very important part in the management of many types of arthritis, and although its employment has been enthusiastically advocated by many authorities on rheumatic diseases, nevertheless physical therapy should never be used to the exclusion of other therapeutic procedures. The physician who is confronted by a case of arthritis should, after establishing the diagnosis, map out a program which may include not only physical therapy but also psychotherapy, elimination of trauma, dietetic management, surgical removal of foci or other surgical measures, administration of vaccines, administration of analgesics and other drugs and climatotherapy.

Whereas it is possible to bring great benefit to the patient who has arthritis by the utilization of certain simple physical measures as a part of the home treatment, such procedures can be used to greatest advantage only when they are made a part of a well planned program of general treatment. It is essential, in establishing the diagnosis, that one have in mind a workable classification of the various forms of arthritis. There are almost as many such classifications as there are physicians specializing in the treatment of arthritis. No special grouping can be considered entirely satisfactory, and any classification which might be presented is open to criticism. One such list which has proved acceptable as a basis for general diagnosis and treatment is, in abridged form, as follows:

Traumatic arthritis: That caused by trauma.

Infectious arthritis: That caused by infections of known type (identifiable bacteria) and that possibly or probably caused by infections (unidentifiable or related toxins).

Degenerative arthritis: That caused by or characterized by degenerative changes in tissue.

Chemical arthritis: That whose chief (or only) obvious characteristic is a recognizable (or suspected) chemical derangement.

Neoplastic arthritis: That due to neoplasms, malignant or benign.

Miscellaneous: Miscellaneous and unclassifiable types.

This classification will be employed in the present discussion.

Once the diagnosis has been established and the disease properly classified, the physician may proceed to

the organization of a plan of therapeutic management. The employment of physical measures plays a very important part in any such plan. In support of this contention one need only refer to the statements of various outstanding authorities. For example, Fox and Van Breemen¹ said "... we rely to a great extent

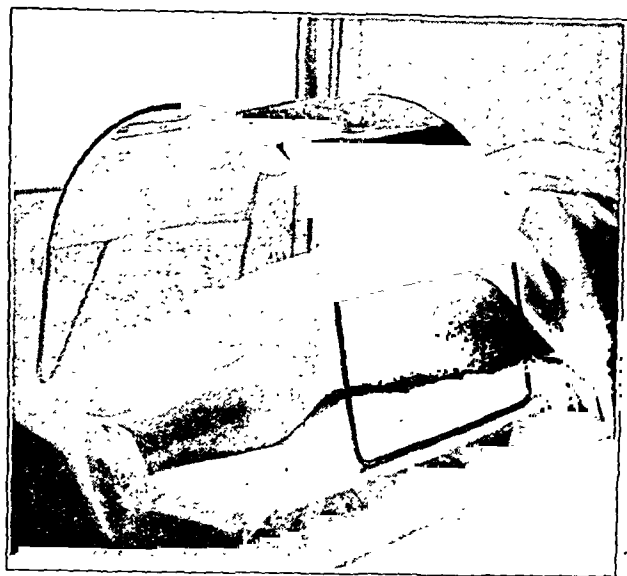


Fig. 1.—A homemade baker for therapeutic use. Specifications are supplied and any electrician can make this at little cost.

on Physical Medicine." Copeman² spoke of the employment of physical methods as "one of the most important therapeutic advances made in this century." Hench³ wrote, concerning the treatment of arthritis, "Physical therapy remains the most potent single weapon at hand," and Pemberton and Osgood⁴ expressed the opinion that any discussion of arthritis should "develop, at length, the important field of physical therapy."

It is not essential to institutionalize a patient in order to apply physical treatment. There are many simple physical measures that can be applied in the patient's own home. Even when a patient with arthritis has been benefited by prolonged sessions of institutional physical therapy, such benefits may be lost promptly unless, on his return home, steps are taken to continue physical therapy as a home procedure. For example, the average patient who has atrophic arthritis is financially unable to continue indefinite hospitalization. It therefore becomes necessary to offer a substitute at home for the more elaborate routine of physical therapy in the hospital. An attempt will therefore be made to discuss the various types of arthritis from the standpoint of the main cause or characteristic, the general plan of management of such cases and especially with regard to the less complex physical measures which may be employed in the home as an extremely important phase in the treatment of arthritis and as a substitute for more elaborate hospital procedures. The physical measures will be described first, and then their applications in various forms of arthritis will be discussed.

SIMPLE PHYSICAL MEASURES WHICH CAN BE EMPLOYED IN THE PATIENT'S OWN HOME.

Thermal Agents.—In the management of arthritis, local or general application of heat may be of great value. Occasionally, but less frequently, applications of cold are indicated. Often alternate applications of heat and cold (contrast baths) are of value.

Heat: Heat is most readily applied in the patient's own home by means of some simple device.

Homemade baker. An inexpensive homemade baker (fig. 1) can be constructed which consists of a piece of ordinary sheet tin curved in a rooflike fashion on a framework of strap iron or rods. Two double electric sockets are attached to the under surface of the roof and the necessary wiring is installed. Bulbs of either 60 or 120 watts or a combination of these may be inserted into the four lamp sockets in order to obtain the desired amount of heat. Complete specifications for construction of this device are as follows:

It is 19 inches long, 19 inches wide, 16 inches high over all, supporting framework constructed of rod iron $\frac{1}{4}$ inch in diameter or $\frac{1}{16}$ by $\frac{5}{8}$ inch strap iron, reflector highly polished tin sheeting, two double receptacles (sockets), 250 volts, 650 watts, four 60 or 120 watt carbon filament lamps. The tin is rolled over the rod iron supports or is riveted to the strap iron; then the receptacles are connected in multiple with heavy lamp cord 6 feet long. A rubber plug is attached to the end of the cord. This baker is designed for applying heat to the legs, arms or body. If the baker is to be applied only to the legs or arms, the height may be only 14½ inches (36 cm.) at the highest point. If the baker is to be applied only to the trunk, the height may be increased to 18 inches (45 cm.).

Clamp lamps for home use. I have previously described in THE JOURNAL⁵ an inexpensive clamp lamp (fig. 2) which consists of a small cup-shaped

polished reflector, similar to those used in photography with "photo flash" bulbs. This reflector is attached by means of a ball and socket joint to a small rubber-covered clamp which may be fastened to the back of a chair, the edge of a table or the side of a bed. For therapeutic use, the reflector should contain a 250 watt Mazda CX bulb such as is manufactured by both the General Electric and Westinghouse companies. A 200 watt carbon filament bulb may be used, but it is not

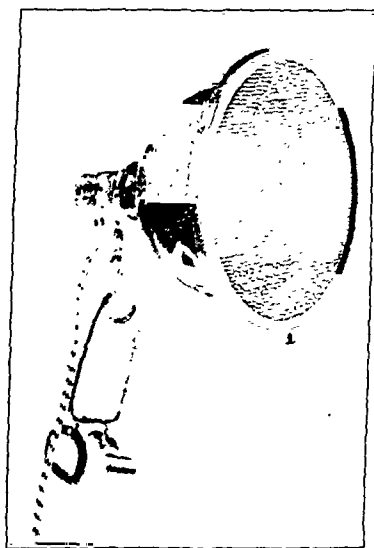


Fig. 2.—Clamp lamp suitable for applications of radiant heat in the home treatment of arthritis. The device may be clamped to the back of a chair or to the side of a bed.

quite so satisfactory as is the CX bulb. In application, the lamp is placed at a distance of approximately 18 inches (45 cm.) from the part of the patient's body which is to be treated, and treatments should last for from thirty to forty-five minutes, usually administered

1. Fox, R. F., and Van Breemen, J.: *Chronic Rheumatism; Causation and Treatment*, London, J. & A. Churchill Ltd., 1934.
2. Copeman, W. S. C.: *The Treatment of Rheumatism in General Practice*, Baltimore, William Wood & Co., 1933.
3. Hench, P. S.: *Acute and Chronic Arthritis*, in Nelson Loose-Leaf Surgery, New York, Thomas Nelson & Sons, 1936, vol. 3, pp. 104-175L.
4. Pemberton, Ralph, and Osgood, R. B.: *The Medical and Orthopedic Management of Chronic Arthritis*, New York, Macmillan Company, 1934.

5. Krusen, F. H.: A Simple Inexpensive Heat Lamp, J. A. M. A. 107:780 (Sept. 5) 1936.

once or twice daily. The employment of these luminous heaters (bakers or clamp lamps) is to be preferred to the use of the common electric heating pad.

Electric heating pads. These pads often become too hot for satisfactory local treatment and may cause cutaneous burns. The Council on Physical Therapy has discussed the need for warning physicians and their patients against the indiscriminate employment of these pads for therapeutic purposes. Hench⁶ has shown that the average low temperature of the ordinary household electric heating pad is approximately 107.6 F. (42 C.), the medium temperature, 181.4 F. (82 C.) and the high temperature 244.4 F. (118 C.). These temperatures are, of course, entirely too high for the local treatment of the average arthritic joint.

Hot paraffin packs. If electricity is unavailable in the patient's home, local applications of ordinary hot paraffin may be employed as a substitute for the simple radiant heat devices. Almost invariably the patient has in his home a stove and a double boiler, and he can obtain from the nearest grocery store some paraffin such as is commonly used by the housewife for sealing preserve jars. The lower pan of the double boiler is filled with water and the cakes of paraffin are placed in the upper pan. The paraffin is then melted and permitted to cool until a thin film has formed on its surface. At this time, when the paraffin is at its low melting point, it may be painted over the involved arthritic joint or other region with an ordinary paint brush or swab of linen on a stick. About twelve coats should be applied in rapid succession and this thick layer of paraffin is allowed to remain in place for from thirty to sixty minutes. Paraffin should never be applied over a hairy region without preliminary oiling or shaving. On rare occasions the patient's skin is sensitive to paraffin and a slight rash may be produced. At the end of the treatment the paraffin may be readily peeled away from the skin and returned to the double boiler for remelting and subsequent employment. The paraffin can be kept sterile by bringing the water in the boiler to the boiling point for several minutes.

A variation of this technic which can often be employed to advantage at home in the management of subacute inflammation of arthritic joints is to apply a dressing of alternate layers of gauze and paraffin. First a layer of paraffin is painted around the joint and this is encircled by a layer of gauze bandage. Another layer of paraffin is painted over the gauze and then the bandage is wrapped over this second layer of paraffin. These alternate layers of gauze and paraffin are applied in quick succession until a thick, firm, hot dressing envelops the entire joint. If the dressing is of sufficient thickness, it will remain hot for at least an hour. The dressing is then left on as a comfortable, firm support for a period of twenty-four hours; then the procedure is repeated.

Whirlpool baths. During the war of 1914-1918 there was developed by French army surgeons a device called the whirlpool bath which came into general use not only abroad but also in the centers for rehabilitation of disabled soldiers in this country. These whirlpool baths are now used extensively in many civilian hospitals and they have been found to be of considerable value for producing hyperemia in the extremities of patients suffering from various forms of arthritis. A simple whirlpool bath can be constructed

very cheaply for home use. The Council on Physical Therapy has prepared specifications for the construction of this device. Any plumber can make it at a cost of a few dollars by following the illustrations (fig. 3) and specifications.

Diathermy. Diathermy occasionally may be employed by the physician for treatment of arthritis at the patient's home, and small portable diathermy machines are available which can be taken to a patient's home. However, such machines should never be employed by the patient for self treatment, since much more harm than good is likely to ensue. Actually, diathermy is rarely needed for the treatment of arthritis, and simpler methods of applying heat will usually be found more suitable.

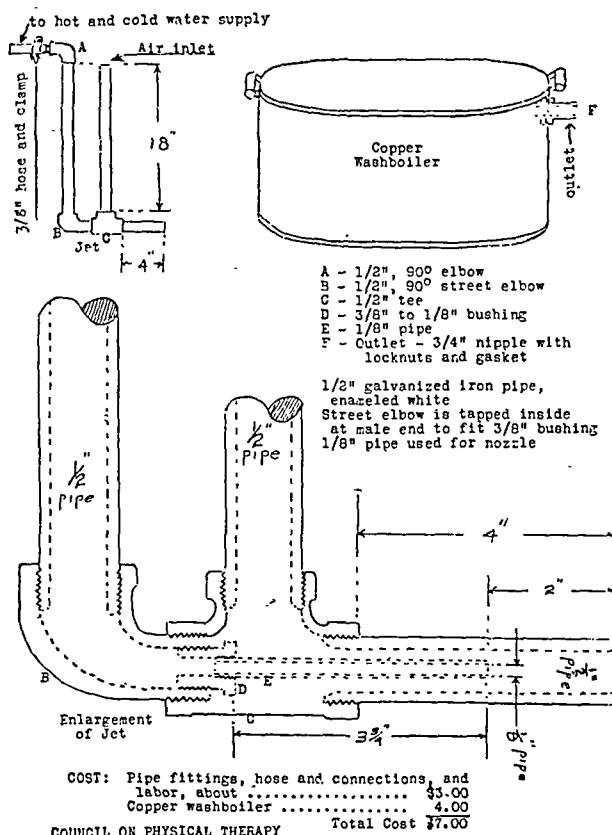


Fig. 3.—Specifications for whirlpool bath.

Heliotherapy. Occasionally patients with arthritis who are in poor general physical condition, undernourished and suffering from secondary anemia may be benefited by a series of exposures to natural or artificial sunlight. Such exposures tend to improve the function of the skin and stimulate metabolic processes. Exposures should be made judiciously under careful medical supervision. Employed with a sense of proportion in cases of arthritis in which it is indicated, general ultraviolet irradiation may be considered as a valuable auxiliary measure. If climate and home conditions permit exposure of the nude patient to sunlight, the best procedure is the method of insolation described by Rollier (fig. 4).

If it is not possible, because of weather conditions or other interfering factors, to expose the patient to sunlight, one may employ a small mercury quartz sun lamp at home for the production of artificial heliotherapy. For this purpose the so-called S-1 lamp

6. Hench, P. S., in discussion on Freund, H. A., and Watts, F. B.: The Treatment of Subacute Bacterial Endocarditis with Excessive Hyperpyrexia, in Abstracts of Papers and Discussions, Fifth Annual Fever Conference, May 2 and 3, 1935, pp. 87-88.

(fig. 5) may be very satisfactory. When this lamp is employed, it is usually applied at a distance of 2 feet from the bodily surface and exposures of five minutes over the upper half and lower half of the front of the body and then the lower and upper halves of the back of the body are made. Treatments are usually given three times a week, and the dosage is gradually increased

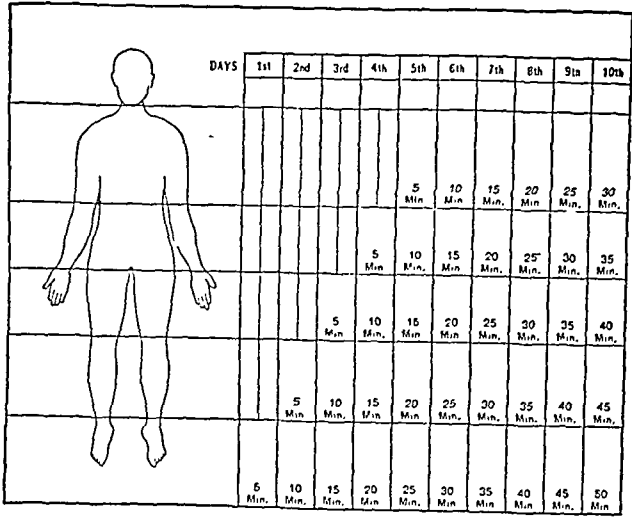


Fig. 4.—Rollier's schematic diagram of insolation including the method of progressive exposures of the patient to sunlight.

at each subsequent session until a maximum of thirty minutes over each area is reached. At no time should a marked sunburn be produced, but a mild erythema is permissible. If there is not too much erythema, the second exposure over each area may be for ten minutes, the third for fifteen minutes, the fourth for twenty minutes and so on. If there is too much reaction after any treatment, the dose should not be increased at the next session, and increases thereafter should be more gradual.

Tub baths. It has been found that in certain cases of atrophic arthritis very mild febrile reactions may tend to control an exacerbation of the disease. In institutional practice it is frequently customary to give short sessions of fever therapy in one of the elaborate cabinets now available for this purpose. These sessions usually last for thirty minutes, and the bodily temperature is usually raised to approximately 101 F. (38.3 C.). Such treatments are never administered to asthenic or debilitated patients except with extreme caution. However, for more robust patients the procedure may be very valuable. It is entirely possible, under proper medical supervision, to obtain exactly the same type of febrile reaction at home by placing the patient in his own bathtub. The temperature of the water may be varied between 98 and 105 F. (36.6 and 40.5 C.) and the duration may vary from ten to forty-five minutes. In some instances it may be advisable to increase the temperature of the water gradually during the bath. Usually the patient's oral temperature will rise in thirty minutes to approximately 101 F. (38.3 C.), sweating is induced and the general metabolism is stimulated. In all cases milder temperatures and shorter periods of time should be used at first, the temperature and duration being increased at subsequent sessions as tolerated.

The full wet pack. The usual method of applying a full wet pack may be employed to produce a mild circulatory reaction in patients who have arthritis. The first effect is to cause a contraction of the peripheral

vessels and an increase of the respiratory rate when the cold wet sheet used in the pack is applied to the skin. Within one to five minutes, however, after the patient has been wrapped in blankets, a "reaction" occurs, the cutaneous vessels dilate, and the patient becomes warm and begins to perspire rather profusely. The usual time of application of a wet pack is from thirty to sixty minutes. The exact technic has been well described by Coulter in the Handbook of Physical Therapy.⁷

Cold. Occasionally applications of heat are not well tolerated by a patient suffering from arthritis. This, however, is a rare exception, since in the vast majority of such cases the greatest relief is afforded by applications of heat. Once in a while local applications of cold may prove valuable to allay acute inflammation in joints.

Cold compresses. Cloths wrung out in cold water and applied directly over the joint for a period of from ten to fifteen minutes are occasionally used. Applications of ice bags and ice coils are usually not employed because the cold from these sources is too intense.

Cold baths. By proper timing and graduation of cold baths or showers, the arthritic patient who is sensitive to cold may be gradually made more tolerant to it. Likewise, brief cold baths or showers may be employed as a "metabolic whip." The patient who has arthritis and who is frequently abnormally sensitive to external cold may sometimes be benefited by the so-called hardening treatment (abhärtung), which consists of repeated applications of brief cold baths or showers. Usually during such brief baths, which should last for not more than one to five minutes, rapid friction is applied to the surface of the patient's body to stimulate a "reactive hyperemia." If this "reactive hyperemia" is not obtained and the patient is chilled and blue following such a brief application of cold, the degree of coldness should be diminished and the time shortened until the proper "warm and glowing" reaction is obtained. Thereafter, the intensity and duration of the cold bath or shower may be increased

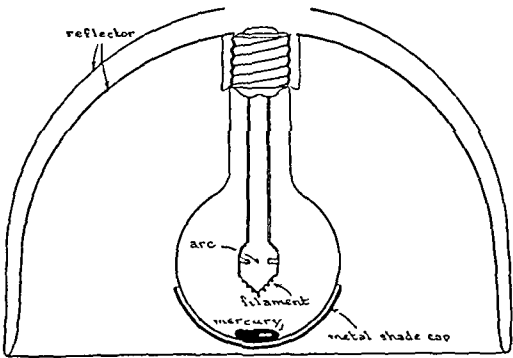


Fig. 5.—S-1 lamp which may be employed for artificial heliotherapy at a patient's home.

slowly, a correct reaction always being obtained until the patient readily tolerates cold.

Heat and Cold: Contrast baths. Contrast baths (fig. 6) have been applied effectively for many years in the management of arthritis, particularly hypertrophic arthritis of the extremities. They are especially useful in the presence of cold and clammy extremities. The successive stimuli produced by alternations of hot and

7. Coulter, J. S.: Hydrotherapy, in Handbook of Physical Therapy, ed. 3, Chicago, American Medical Association, 1939, pp. 179-193.

cold tend to produce better and more rapid reactions day by day. When contrast baths to the hands or feet are to be employed at home, definite written instructions should be given the patient concerning the method of application. The patient should be told to obtain two buckets or pans of proper size and shape for immersion of the feet or hands. One container should be filled with hot water at comfortable tolerance, from 105 to 110 F. (40.5 to 43.3 C.); the other container should be filled with cool tap water, from 60 to 65 F. (15.5 to 18.3 C.). At first it was customary to immerse the extremities first in the hot and then in the cold water at one minute intervals, beginning and ending in the hot.

More recently, Woodmansey, Collins and Ernst⁸ have made extremely interesting studies on the employment of the contrast bath in cases of rheumatoid (atrophic) arthritis and have demonstrated that the usual practice of applying contrast baths for alternate periods of one minute each does not produce satisfactory responses. After a series of carefully controlled studies they found that the best reaction (active contraction and relaxation of blood vessels and increased flow of blood) is obtained when hot water is applied for six minutes and cold water for four minutes. The next best reactions were obtained with applications of hot water for seven minutes and cold water for five minutes. At the Mayo Clinic our attempts at confirmation of these observations have not been completely successful, possibly because our American patients are accustomed to warmer houses and a warmer environment than were the English subjects studied by Woodmansey⁸ and his associates. Our patients have tolerated such treatments when cold was applied for shorter periods of time not exceeding three minutes and often not longer than one minute. With our patients, the best routine has seemed to be one in which five minutes of heat and two minutes of cold or four minutes of heat and one minute of cold were employed. One should always start and end with immersion in hot water to obtain the best vascular response. If the five minute hot, two minute cold routine is employed, from five to seven alternations should be made, thus: 5-2-5-2-5 or 5-2-5-2-5-2-5. It will be seen that such applications would last either nineteen or twenty-six minutes. If the four minute hot, one minute cold routine is employed, the series of alternations should be either seven or nine, thus: 4-1-4-1-4-1-4 or 4-1-4-1-4-1-4-1-4. It will be seen that such an application would last a total of nineteen or twenty-four minutes.

Hench⁹ has employed contrast baths frequently for hypertrophic and atrophic arthritis for many years. Hollbrook and Hill¹⁰ have mentioned that they were "especially useful," and Fox and Van Breemen¹ have advocated their employment.

MASSAGE, MANIPULATION AND SPLINTAGE

Massage.—Massage will be found to be of great usefulness, particularly in the treatment of atrophic arthritis.¹¹ It should not be employed, however, if there is acute pain on movement or if there is a marked rise

of temperature in the region of the affected joint. As a rule, direct massage over the joint is to be avoided, although extremely light stroking may at times be employed to relieve pain. As the inflammation subsides, the intensity of stroking and kneading of the muscles and soft tissue around the joint may be increased gradually in an attempt to improve the circulation and tone of the muscles. It is undoubtedly true that harm may result from improper application of massage. Nevertheless it has been found that when, for economic or other reasons, a trained masseuse is not available in the patient's home, a skilled technician can instruct a member of the family in a few harmless simple massage strokes, which may be used either in lieu of or to augment professional treatments. It is a good plan to instruct a member of the patient's family in a simple massage routine which may be employed at home daily and to recommend in addition, if it is obtain-

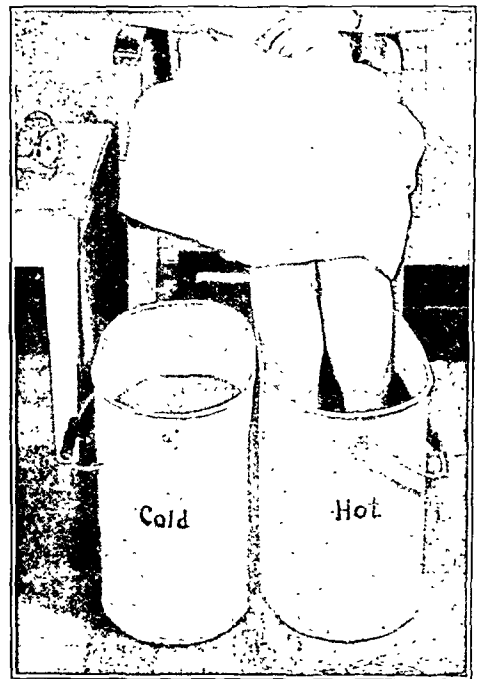


Fig. 6.—Contrast baths to lower extremities (from Krusen¹¹).

able, professional massage two or three times weekly. It is realized that such a plan may be criticized; however, skilled masseuses are unfortunately not universally available and in many instances the patient must be advised to follow the best possible home treatment routine. I am convinced from long experience that when patients are properly instructed concerning home massage much more good than harm will result even though the amateur masseuse cannot hope to approach the skill of the trained technician.

Pemberton and Osgood⁴ pointed out that the process of massage for the patient with arthritis consists essentially of a light form of stroking known as effleurage, which is usually applied in a centripetal direction. As the massage becomes better tolerated, it should progress to a heavier and deeper rubbing and kneading known as petrissage. This kneading should be applied to the accessible tissues around involved joints. The aim of the procedure is to increase the flow of blood, improve the tone of muscles and overcome limitation of motion

8. Woodmansey, A.; Collins, D. H., and Ernst, M. M.: Vascular Reactions to the Contrast Bath in Health and in Rheumatoid Arthritis, *Lancet* 2: 1350-1353 (Dec. 10) 1938.

9. Hench, P. S.: Personal communication to the author.

10. Hollbrook, W. P., and Hill, D. F.: The Management of Atrophic Arthritis in Relation to the Different Phases of the Disease, in the Proceedings of the American Association for the Study and Control of Rheumatic Diseases, First Annual Meeting and Third Conference, held at Cleveland, June 11, 1934, pp. 78-87.

11. Krusen, F. H.: Physical Therapy in Arthritis, New York, Paul B. Hoeber, Inc., 1937.

in the joint. Poynton and Schlesinger¹² believed that the value of massage was often underrated and that "many crippled rheumatic patients find that, combined with heat, they obtain more relief from it than from any other form of treatment."

Manipulation.—Because every effort should be made to prevent the occurrence of contractures, especially in atrophic arthritis, attempts at mobilization are an essential part of the treatment. Mennell¹³ has said that mobilization should be restored, if possible, at the earliest moment. If one joint is maintained in a state of rigidity there may be lack of mobility in neighboring joints. Careful administration of relaxed movements usually employed immediately following applications of heat and massage will be of great value in the prevention of stiffness of affected joints. Joints which are sensitive should be mobilized after the other joints have had their exercise. Manipulation, even in the form of relaxed movement, should not be employed as long

against subjecting a joint which shows atrophic changes to manipulation. He felt that this warning rested on grounds which could be disputed. He believed that an inflammatory reaction which was sufficient to produce changes in joints must also entail inflammation of periarticular structures and thought that it followed of necessity that there were possible adhesions in the soft tissues following the subsidence of the inflammation. He said that if these adhesions in the periarticular structures could be freed great benefit might ensue. Copeman² wrote that the physician might find cautious manipulation to be "a powerful weapon in his encounters with many cases of quiescent arthritis" after the inflammatory processes had subsided.

In my opinion there is one type of manipulative procedure which should be employed more frequently, especially in cases of quiescent atrophic arthritis. This procedure can be spoken of as "active assistive" movement of the joint. No anesthetic is employed, but heat followed by gentle massage of the periarticular structures to produce a maximal amount of relaxation should first be applied. The patient then makes an active effort to move the joint through its full range of motion slowly and rhythmically and is assisted by the operator in extending the movement beyond the voluntary range; hence the term "active assistive" movement. Slowly and carefully applied only once or twice a day, it may cause marked increase in range of motion.

Forcible manipulation under anesthesia should never be attempted until this more conservative daily routine has been tried for a period of two or three weeks. Forced manipulation of an arthritic joint should never be considered to be a procedure for home use. Henderson¹⁵ has wisely emphasized the dangers of such forced manipulation, which must always be done with the patient anesthetized. He stated that one of the last things that he would put in the hands of the younger orthopedist is manipulation under anesthesia. He thought that it required more experience than any other procedure. Fractures and dislocations occur too often following inept manipulation for it to be considered lightly as a home or even an office procedure. It must always be remembered that extraordinary caution should be used in any manipulation of an arthritic joint even when the procedure is performed as a hospital measure in the hands of a skilled orthopedist.

It should be pointed out that the shoulder joint and the hip joint, particularly in arthritis, often respond with increased motion following manipulation. On the other hand, there is seldom a good functional result from manipulation of a finger, wrist or elbow. The function of the knees can frequently be improved, but before subjecting a patient to manipulations of the knees one should be certain that the feet are capable of bearing weight and that the hips are not ankylosed or flexed so that the patient cannot walk anyway.

Splints.—Above all else, careful attention should be given to the prevention of deformities, especially in atrophic arthritis. With a little care, prevention of deformity is frequently possible. With neglect, marked deformity is frequent. Once deformities have developed, it may take years to correct them. Splints are an important aid in preventing contractures. Hench³ has pointed out that prevention of deformities is "primarily the responsibility of the general practitioner." It is

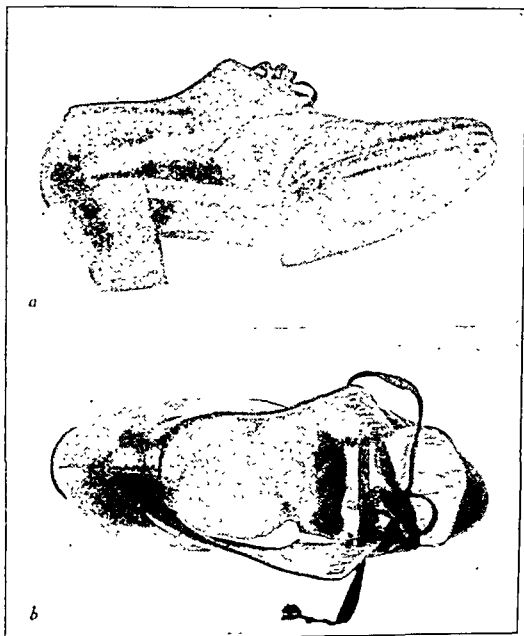


Fig. 7.—Shoes: *a*, a suitable metatarsal bar to relieve pressure on the anterior arch of the foot and a slight lift on the inner side of the sole which proved satisfactory for one patient; *b*, a soft felt pad within the shoe for the support of the longitudinal arch.

as there is any acute pain on movement. Joints which are mildly sensitive, however, may be mobilized gently, attempts being made to carry them slowly and rhythmically, only once or twice daily, through the fullest possible range in each direction. Above all, the joint should never be jerked or pulled violently, but slow, graduated pressure should be applied up to a point just short of producing severe pain. If there is an increase in joint pain following such relaxed movement which persists until the following day, it will be known that the manipulation has been too rigorous and although application of heat and massage may be continued, further relaxed motion should be discontinued for one or two days and then be applied less strenuously. Mennell¹⁴ has pointed out that warning is often given by physicians

12. Poynton, F. H., and Schlesinger, Bernard: *Recent Advances in the Study of Rheumatism*, Philadelphia, P. Blakiston's Son & Co., Inc., 1931.

13. Mennell, J. B.: *Massage: Its Principles and Practice*, ed. 2, Philadelphia, P. Blakiston's Son & Co., Inc., 1920.

14. Mennell, James: *Backache*, Philadelphia, P. Blakiston's Son & Co., Inc., 1931.

15. Henderson, M. S.: *Physical Therapy and the Management of Stiff Joints*, Arch. Phys. Therapy 17: 562-566 (Sept.) 1936.

probably the most essential phase of home treatment. The chief deformities to be sought for and prevented are adducted shoulders, thoracic kyphosis and fixation of the thorax, flexion of the elbows and especially of the wrists and knees as well as loss of abduction of the hips and foot drop. The patient should lie on a bed that does not sag. Several times during the day he must lie without pillows and with all joints fully extended. Posterior plaster shells or splints may be essential to prevent or overcome flexion contractures. Night splints which hold an extremity in extension often prevent potential flexion deformities. Particular pains should be taken to avoid the constant use of pillows beneath the knees and under the head, since these frequently induce deformities. The placing of a small pillow under the thoracic part of the spinal column, with the patient lying with the elbows flattened back on the bed with the hands clasped behind the head, will tend to prevent flexion deformity of the spinal column as well as adduction and internal rotation of the shoulder. Padded cock-up splints with the wrist in dorsiflexion frequently may be used to prevent palmar flexion and wrist drop. The use of sand bags, right angle splints or pillows to prevent toe drop and to keep the foot in slight pronation is very important.

SHOES, BANDAGES AND ELASTIC SUPPORTS

Shoes.—The patient who has arthritis may habitually walk around the home for hours at a time in shapeless and loose bedroom slippers because he believes that the slippers "are more comfortable" than shoes. As a matter of fact, a well fitting, stiff shanked shoe is much more comfortable; and in many instances if a soft pad is placed under the instep to support the longitudinal arch of the foot and a metatarsal bar (a raised leather piece on the external sole just back of the anterior arch of the foot) is employed to support the anterior arch, and if occasionally a soft heel pad or wedge is placed under the heel, even the arthritic patient with painful joints may walk with considerable comfort. Ober¹⁶ has pointed out that there is really no such thing as an "orthopedic shoe." The shoeing of each patient is an individual problem. In my experience the employment of soft felt pads and the metatarsal bar is often of value in conjunction with any well fitting and properly constructed shoe (fig. 7).

Hench and Meyerding¹⁷ found that rigid metal supports are usually irritating and at times seem to favor pressure atrophy of the plantar muscles.

Supports.—Occasionally a well fitting elastic knee support or an elastic web bandage applied properly may give comfort, particularly if there is a slight tendency toward a flexion deformity. Such supports may occasionally be applied to the ankles but are rarely of value for other joints.

EXERCISE, POSTURAL TRAINING AND REST

Exercise.—The usual scheme in mobilizing a joint which has been the seat of acute inflammation in arthritis is first to employ relaxed movements; second, active assistive exercises, and at the earliest possible moment to change to active voluntary exercises. In the beginning these active exercises should always be practiced without weight bearing. Weight bearing should

be begun only when sufficient range of motion has been obtained to permit sufficient extension and flexion for reasonably good function and when the muscles have resumed reasonably normal contour and are of sufficient tone to maintain the weight of the body. If active motion is started too soon, pain and muscular spasm will at once develop and serve as a warning to diminish activity.

As soon as the patient starts wary movements of the joints when the acute inflammation begins to subside, this is the signal for the institution of the first cautious massage and gentle relaxed motion. It should be the rule to avoid exercise which, "whether it produces pain or not, is followed by a hang-over such as an increase of pain that day or the next."¹⁷ It is believed that the alternate contraction and relaxation of groups of muscles and their antagonists aids in improving circulation and that the movement of the joint assists in the maintenance of normal physiologic activity.¹⁸ The chief aim in the treatment of chronic atrophic or hypertrophic arthritis should be to restore normal motion of the joints.

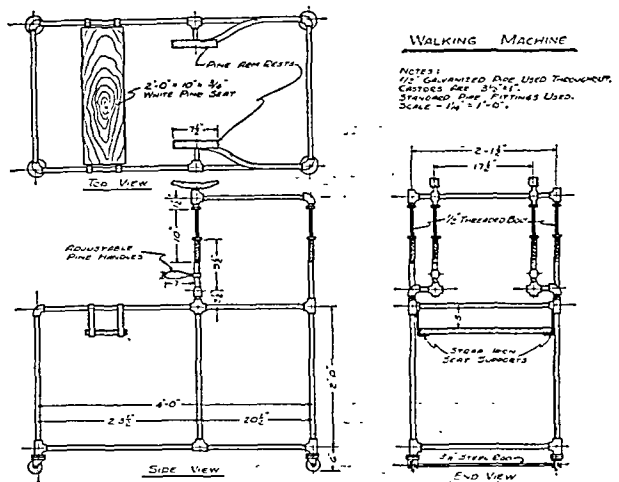


Fig. 8.—Specifications for the construction of a homemade "walker." These specifications have been prepared by the Council on Physical Therapy of the American Medical Association.

This is, of course, best accomplished by means of graduated exercises. Most patients with atrophic arthritis are at their worst following periods of inactivity, and most of them find that they can delay disability by resorting to exercise. Active exercise should be entered on at the earliest possible moment. It has been said¹ that the morning toilet of the arthritic patient should include the movement of all his joints. It should be stressed that all such exercises should be slow and through the fullest possible painless range. Jerking motions or "pump handle" movements should be strictly avoided. One slow movement through full range is preferable to many "wiggles" through partial range. Weight bearing should be avoided until it can be well tolerated. Knees should be well straightened before walking is permitted. Walking should usually be started in a "walker," which consists of a frame on wheels which supports most of the patient's weight on the axilla and elbows (fig. 8). Finally the walker is discarded for suitably measured crutches, and at last the objective of unsupported walking may be attained.

18. Gaenslen, F. J.: Aids in Muscle Training, with Special Reference to Sling Suspension and Underwater Exercises, in Handbook of Physical Therapy, ed. 2, Chicago, American Medical Association, 1936, pp. 128-139.

16. Ober, F. R.: Personal communication to the author.

17. Hench, P. S., and Meyerding, H. W.: The Results of Failure or Neglect in the Care of Chronic Infectious (Atrophic) Arthritis. The Characteristic Deformities and Their Prevention, M. Clin. North America 18: 549-571 (Sept.) 1934.

Postural Exercises.—An important point in the management of the patient with chronic arthritis is to remove mechanical handicaps by maintaining the best possible alinement of joints. Postural exercises may be valuable for this purpose. It has been noted by Goldthwait and his co-workers¹⁹ that postural exercises not only improve the alinement of joints but also, they believed, tended to improve function of the heart, lungs and abdominal organs. They noted that hypertrophic arthritis affected chiefly points of chronic strain such as the spinal column, fingers, knees and hips. These joints, with the exception of the fingers, are all involved in weight bearing and may be injured by faulty weight bearing. The fingers, because of their great activity, are subject to more trauma than most other joints. It is concluded that proper postural training will tend to lessen trauma by improving alinement of joints. All patients who have arthritis and who show

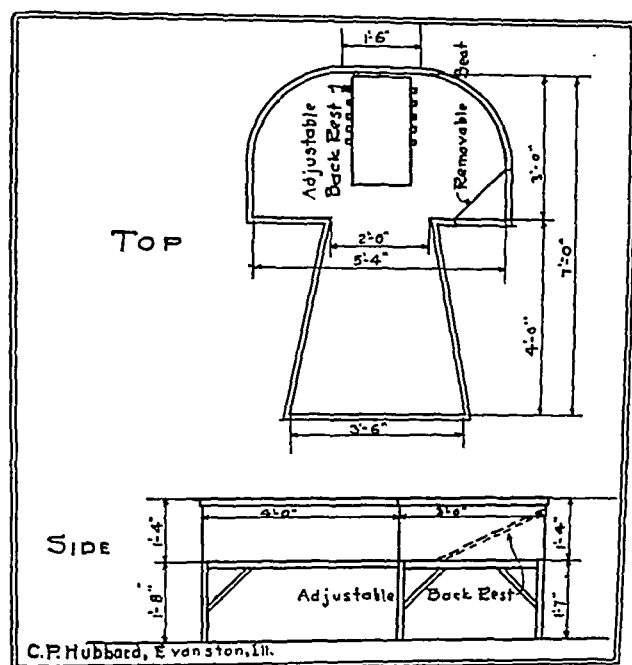


Fig. 9.—Specifications for the construction of a homemade Hubbard tank, made of heavy galvanized iron, finished in white enamel inside and out. The supports are of 1 inch angle iron. There is a 1½ inch drain with stopper.

any signs of faulty general posture should be taught the five cardinal rules for the assumption of correct posture: 1. Walk with the weight evenly distributed and the feet pointed straight ahead. 2. Roll the hips under. (Contract the buttocks down and the abdominal muscles up, thereby tilting the pelvis back and straightening the lumbar spine. This must be explained and demonstrated to the patient.) 3. Raise the chest up, thereby enlarging the thoracic cavity and raising the diaphragm. 4. Stretch the back part of the top of the head toward the ceiling, thereby straightening the cervical and dorsal spine. 5. Sit, stand and walk as "tall" as possible.

Underwater Exercises.—Occasionally, underwater exercises may be of considerable value in the reestablishment of function for patients with atrophic arthritis. Such exercises are particularly useful when many joints are involved. It is best to administer them in a Hubbard

tank and occasionally these tanks are constructed for home use (fig. 9). In their absence the patient can perform some of the exercises in his own bath tub or in a community swimming pool. Currence²⁰ recommended placing the patient who has arthritis in a bath heated to bodily temperature. The temperature is then gradually increased to a point at which maximal muscular relaxation is obtained. This is usually between 101 and 104 F. (38.3 and 40.0 C.). Thereafter the temperature of the water is gradually lowered to the point of individual comfort, which is usually between 96 and 98 F. (35.5 and 36.6 C.). As soon as complete relaxation is obtained, attempts at active motion are started. At first, gentle stroking massage is employed, then gentle kneading and finally relaxed movements and, later still, active assistive or active movements under water. According to Lowman,²¹ one should avoid protracted periods in the water as well as chilling and too rapid cooling of the skin. Painful joints should be carefully protected while the patient is drying off and changing clothing. Smith²² pointed out that the buoyancy of the water and the constancy of the temperature, which remains at the optimum throughout the entire time of the exercises, are valuable factors in underwater exercise. In addition, there is the possibility of activity in all planes. Joints may be moved through a greater arc of motion without pain than otherwise, and there is a favorable psychologic effect. It has been said that the best way for a patient with arthritis to start walking is in a pool.²³

Occupational Therapy.—The home use of occupational therapy may be extremely useful in rehabilitating patients who have chronic arthritis and many simple devices commonly found in the home may be employed to advantage to strengthen muscles and increase motion in joints by providing certain exercises as part of the occupation. Occasionally a velocipede jig saw and in its absence an ordinary bicycle with the rear wheel jacked up may be used to increase range of motion in the knee, hip joint or ankle. The pedals may be adjusted to increase gradually the limits of motion of the joint. Such pedaling exercises help to develop the muscles of the legs, hips and back. When the ankle alone needs exercise, work with a foot power sewing machine or foot pedal scroll saw may provide the necessary exercise. Clay modeling²⁴ or the use of a plane or hammer may be useful in mobilizing stiffened fingers and wrists. Basket weaving has been recommended for exercising the shoulder, elbow or upper portion of the back. All of these occupations can be followed at home, especially if a skilled occupational therapist can visit the home a few times and start the patient on a proper program of curative occupational procedures; or the patient can be so instructed in an institution before he is sent home.

Rest.—In any case of arthritis, rest is of cardinal importance during the stage of acute inflammation. If there is pain on movement, marked tenderness, fever or increase in the local temperature of the part, rest, as a rule, is indicated. It should be remembered, however,

20. Currence, J. D.: Under Water Therapy in Arthritis, Arch. Phys. Therapy 16: 291-294 (May) 1935.

21. Lowman, C. L.: Underwater Gymnastics, in Handbook of Physical Therapy, ed. 1, Chicago, American Medical Association, 1930, pp. 110-116.

22. Smith, E. M.: Underwater Therapy in Chronic Arthritis, Arch. Phys. Therapy 16: 534-536 (Sept.) 1935.

23. Green, W. T., and Ober, F. R.: Chronic Arthritis in Children, in the Proceedings of the American Association for the Study and Control of Rheumatic Diseases, First Annual Meeting and Third Conference, held at Cleveland, June 11, 1934, pp. 88-94. Holbrook and Hill.

24. Mock, H. E., and Abbey, Mary L.: Occupational Therapy, in Handbook of Physical Therapy, ed. 2, Chicago, American Medical Association, 1936, pp. 140-153.

19. Goldthwait, J. E.; Brown, L. T.; Swaim, L. T., and Kuhns, J. G.: Body Mechanics in the Study and Treatment of Disease, Philadelphia, J. B. Lippincott Company, 1934.

that such rest should be permitted only with the joint held in a position to prevent contracture and deformity. Furthermore, rest should not be continued indefinitely. As soon as inflammation subsides and the patient starts cautious movement, rest can be discontinued and mobilization started. However, even after inflammation has subsided, joints should be rested in the sense that heavy trauma from weight bearing and other causes should be avoided. Likewise the irritation of repeated movements (wiggling of joints) should be prevented. At the same time that rest is being provided, slow rhythmic movements through the full range of motion in each direction should be attempted once or twice a day. At all times, fatigue should be guarded against. The patient should avoid fatigue rather than remain at absolute rest. The problem is more one of rest plus mobilization than of rest versus exercise. The patient who has chronic arthritis should avoid "hurry and worry" and at the same time should take enough nonfatiguing general exercise to improve his general metabolism and posture and should employ sufficient local exercise to maintain proper mobilization and alignment of his joints. General rest should be prescribed in definite quantity, the prescription being modified from a basic ten hours of rest in bed at night and one hour of rest in bed in the morning and afternoon.

MANAGEMENT OF VARIOUS FORMS OF ARTHRITIS WITH SPECIAL REFERENCE TO PHYSICAL MEASURES

Traumatic Arthritis.—Traumatic arthritis may be divided into two categories (1) extrinsic (exogenous), generally acute and accidental (often occupational or recreational) and (2) intrinsic (endogenous), generally chronic, usually postural or static. In the management of extrinsic, traumatic, intra-articular lesions, which are usually acute, such as arthritis or synovitis, all phases of management, including physical therapy, should be considered by the physician. A typical example of extrinsic traumatic arthritis is "baseball finger." Reassurance, rest, support, the application of radiant heat, contrast baths and light massage which is gradually increased in intensity should be employed. Later, when acute inflammation has subsided, mild exercises of a slow and rhythmic nature, the joint being carried once or twice a day through the fullest possible range, should be employed to restore mobility of the joint. It will be noted that physical measures play an important part in the therapeutic program.

In the management of intrinsic (usually chronic) traumatic intra-articular lesions, either arthritis or synovitis, physical therapy again plays an important part. Such lesions are generally due to repeated minor trauma associated with joint strain, as a result of conditions such as obesity, flatfoot and scoliosis. As with any other form of arthritis, a general plan of treatment should be instituted in which physical therapy is only one phase. In this group, reassurance is needed, rest of the involved joints is indicated, and of particular importance is the elimination of all removable irritating trauma of occupation, recreation, malalignment or obesity. When the so-called microtrauma is caused primarily by obesity, reduction of weight should be instituted. This may be accomplished not only by dietetic management but also by carefully graduated exercises. If the trauma to the joints is due to postural strains, physical exercises are of importance and a routine of

corrective postural exercises should be inaugurated. Likewise, local applications of heat and massage to the involved joints may relieve pain, tenderness and swelling. Corrective shoes and supports are frequently of value. One of the most common forms of intrinsic traumatic arthritis is static arthritis of the knee joints, usually seen in obese, middle aged women who are on their feet much of the time performing their household duties. The application of elastic bandages to the knees in conjunction with the other measures mentioned may be helpful in such cases.

Under the heading of traumatic arthritis may be listed various extra-articular lesions such as traumatic fibrositis, traumatic bursitis and tendonitis. A typical example is "housemaids' knee." For patients having such extra-articular lesions, as usual, a routine of management should be thought out by the physician. In such cases rest, elimination of causative trauma, if possible, and the use of supports such as roller bandages or braces and particularly applications of heat and sedative massage and in fibrositis firm massage may be of value. Heat may be applied in the form of diathermy or radiant heat and should be followed by massage. During the later stages of recovery, mild exercises are indicated.

Specific Infectious Arthritis.—Specific infectious intra-articular lesions, arthritis or synovitis are generally acute but may be chronic. Under this heading may be listed inflammations of joints which are of known infectious etiology, such as gonorrheal arthritis, tuberculous arthritis and syphilitic arthritis. As with other forms of arthritis, the usual general program of treatment should be outlined and all the measures previously mentioned should be considered. During the acute stage of gonorrheal arthritis when the administration of unfortified sulfanilamide therapy is ineffective, a combination of sulfanilamide and fever therapy is definitely indicated. It has been our experience at the Mayo Clinic that about 85 to 90 per cent of patients who have gonorrhea have shown a response to adequate sulfanilamide therapy when it has been properly administered. In cases of gonorrheal arthritis which do respond to chemotherapy, other routine treatment, however, is indicated and physical measures such as the local application of heat, sedative massage and, during the later stages, active assistive exercises may be of great value in overcoming pain, swelling and periarticular adhesions with limitation of joint motion. Exercise is not inaugurated until acute inflammation has subsided. Whirlpool baths, contrast baths, diathermy or radiant heat may be used to advantage as thermal agents for the treatment of such joints. The sedative massage and active assistive exercises will tend to restore some measure of motion in joints which have not been too badly damaged, and rehabilitation will be much more rapidly accomplished by the employment of these physical measures.

Of particular importance from a physical therapeutic standpoint are the dramatic results which can be obtained when a combination of sulfanilamide and prolonged high, artificial fever is used in the treatment of resistant gonorrhea which fails to respond to unfortified chemotherapy. Such a procedure is strictly an institutional one and cannot be considered under the category of home treatment; but the family physician should be familiar with the possibilities of fever therapy in gonorrheal arthritis in order that he may suggest the proper routine in very resistant cases. We have observed in our fever therapy department fifty-three patients having very resistant gonorrhea who failed to respond to appar-

ently adequate sulfanilamide or sulfapyridine therapy. To each of these patients, sufficient sulfanilamide was given orally to raise the hemal concentration of sulfanilamide to more than 9 mg. per hundred cubic centimeters. Thereafter a single session of artificial fever therapy was administered, the patient's bodily temperature being raised to approximately 106.8 F. (41.5 C.) for ten hours. Of these fifty-three patients, all but two had negative cultures following treatment and the majority of patients required only one long session. A few required two or even three sessions. The procedure is difficult and should be employed only by trained technicians working under constant direct medical supervision. A physician should remain with the patient from the beginning to the end of the session. Fever therapy remains the most potent weapon available for the treatment of gonorrhea and, when employed early, improvement in the lesions of the joints may be very spectacular. Fever therapy, nevertheless, is not recommended until other measures have been tried and have failed. However, one should not delay fever therapy for too long a time.

Physical measures likewise play an important part in the treatment of tuberculous arthritis. Heliotherapy, judiciously employed, may be of value. Gradual exposures to the sun, according to the method of Rollier, or routine general irradiations with a quartz lamp are recommended in such cases. As for other types of arthritis, a routine program of treatment should be instituted.

In treating patients who have syphilitic arthritis, artificial fever induced by physical means may be used to advantage. In such cases, repeated fevers are usually administered twice weekly, the bodily temperature being elevated to 105 F. (40.5 C.) for five hours at each session. This also is an institutional procedure and should never be carried out in an office or in a home.

Recently it has been found that undulant fever (brucellosis) responds frequently to fever therapy, and Prickman²⁵ has pointed out that these studies suggest that "this type of therapy be tried in cases of chronic lesions of the bone with or without sinuses from which organisms of the *Brucella* strain can be cultured. . . ." This suggestion offers new possibilities in the treatment of a type of joint lesion which has previously been considered highly resistant to all forms of therapy. A favorable response has been noted in one such patient who, in more than a year, has had no recurrence of a spinal lesion. It is too early to make any positive statement concerning the value of the procedure, but its consideration is recommended in the absence of any other acceptable treatment.

Physical measures may also be used to advantage at times in the treatment of various forms of specific infectious fibrositis and bursitis.

"Nonspecific" Infectious Arthritis.— This group includes the greatest number of conditions commonly treated as arthritis. The etiology is really unknown; hence the use of the term "infectious" may be questioned, although many believe that this type of arthritis is possibly related to streptococcal infections or to their toxins. Under this classification occur various intra-articular lesions such as those which are associated with rheumatic fever, specific ulcerative colitis, scarlet fever and certain diseases of the skin such as psoriasis and

erythema nodosum. Recently fever therapy has been used much more frequently in the treatment of rheumatic fever, and it has been found that routine applications of heat, massage and graduated exercise are valuable as an adjunct in the treatment of arthritis associated with ulcerative colitis. In treating patients who have psoriatic arthritis, the special form of arthritis occasionally seen in association with psoriasis, physical measures have proved to be a valuable adjunct. The associated psoriasis may be treated to considerable advantage by means of a combination of local applications of crude coal tar ointment and ultraviolet radiation as described by Goeckerman.²⁶ Frequently, with an improvement of the cutaneous lesions, the joint manifestations subside. Local applications of heat and massage are also indicated in the treatment of psoriatic arthritis. Roentgen therapy may also prove efficacious in treatment.

Chronic Infectious (Atrophic or Rheumatoid) Arthritis.—Chronic infectious arthritis is really a subdivision of the nonspecific infectious arthritis group; however, because of the prevalence of the former it is given a separate heading. Synonyms for this disease are atrophic, rheumatoid, proliferative, nonspecific, infectious or infective arthritis. It is in this major group of joint conditions that various forms of physical treatment may prove of great auxiliary value. It is well known that there is no specific therapy for this form of arthritis. In treating patients who have chronic infectious (atrophic) arthritis it is essential that a well developed program of treatment be considered. One should never rely on a single therapeutic measure. It is advisable to consider the removal of definitely infected foci, to place the patient on a definite program of rest, general for the body and local for the joints, and to prescribe a carefully organized program of physical treatment. This program should include the employment of thermal agents, massage, manipulation, splints or supports (to prevent or correct deformities), exercises, local for the joints and general postural exercises, as well as occupational therapy. Simple analgesics may be used to advantage, and a general nutritious, eliminative diet may be in order. Psychotherapy in the form of reassurance and special advice to the patient on how to "live with the disease" should be given. Although physical therapy is only one part of such a program, it is a very important phase of treatment.

The extra-articular forms of "nonspecific" arthritis may be grouped into infectious fibrositis and rare forms of myositis. Chronic infectious fibrositis is the most important and the most frequently overlooked form of extra-articular lesion. Slocumb²⁷ has described this condition in careful detail. Under this classification occur such conditions as "capsular rheumatism, peri-arthritis and periarticular fibrositis." There is also a muscular fibrositis which may be localized as in lumbago or torticollis or diffuse as in "generalized muscular rheumatism." There is likewise a bursal fibrositis, as in subacromial bursitis, and a perineural type, as in certain types of sciatica. Lastly there is tendovaginitis; for example, Dupuytren's contracture or tendon ganglion.

26. Goeckerman, W. H.: Treatment of Psoriasis: Continued Observations on the Use of Crude Coal Tar and Ultraviolet Light, *Arch. Dermat. & Syph.* 24: 446-450 (Sept.) 1931.

27. Slocumb, C. H.: Differential Diagnosis of Periarticular Fibrositis and Arthritis, *J. Lab. & Clin. Med.* 22: 56-63 (Oct.) 1936.

25. Prickman, L. E.; Bennett, R. L., and Krusen, F. H.: Treatment of Brucellosis by Physically Induced Hyperpyrexia, *Proc. Staff Meet., Mayo Clin.* 13: 321-328 (May 25) 1938.

Whereas physical therapy is of little use in the treatment of the rare forms of myositis, such as myositis ossificans and myositis fibrosa, physical measures are of extreme value in the treatment of different types of fibrositis. Fibrositis, which is described at great length in the continental literature, is frequently overlooked in this country. It is usually described as consisting of chronic inflammation of white fibrous tissue, and the intramuscular form is said to be characterized particularly by the formation of small palpable nodules or indurations in the subcutaneous tissues or muscles. It has been stated repeatedly by British authors that firm local massage will "break up" many of the indurations with subsequent relief of pain and muscular spasm. The physical treatment consists of local applications of heat followed by extremely heavy local massage over the indurations or nodules. Ordinary massage is of little or no value. It is essential to establish the diagnosis before the heavy massage is applied, because heavy massage is contraindicated in practically all forms of arthritis and is indicated in the treatment only of peri-articular or intramuscular fibrositis. Daily applications of radiant heat followed by very firm massage administered for many weeks will tend to lessen the intensity of exacerbations of the fibrositis and will provide much comfort to the patient suffering from this condition, although such treatment rarely will effect a complete cure.

Degenerative (Senescent or Hypertrophic) Arthritis.—The intra-articular form of degenerative (senescent or hypertrophic) arthritis is the second most frequently encountered type. Synonyms are degenerative osteoarthritis and spondylitis osteo-arthritis. Heberden's node of the finger is included in this classification. When affecting the knee, the "static arthritis of obesity" may be placed in this category rather than under traumatic arthritis, and "menopausal arthritis" may also be included in this classification. The "hypertrophic spinal column of the elderly" and, in the hips, the morbus coxae senilis are also in this classification. Physical treatment plays an important part in the management of these various forms of senescent or hypertrophic arthritis.

As is always the case, physical treatment should be fitted into a general treatment program. This program may be as follows: 1. Reassurance should be given above all else. Whereas reassurance is required in the treatment of most forms of arthritis, it is particularly important in the management of this form. The condition is essentially not as a rule an ankylosing, severely progressive or crippling disease, as may be the case with chronic infectious (atrophic) arthritis. Although hypertrophic arthritis occasionally may be very crippling, usually it is a nuisance, not a calamity. Since every individual with arthritis pictures to himself a friend who has marked deforming arthritis, it is essential that he be informed that the type of arthritis from which he suffers does not, as a rule, result in such deformities. 2. All removable irritating trauma of occupation, recreation or obesity should be eliminated. 3. Physical therapy should be employed in the form of local applications of heat or contrast baths and sedative massage; mild exercises should be used. Wiggling of the joints should be avoided and extensive exercise is not usually required. 4. Occasionally, roentgen therapy may prove beneficial. 5. The patient should be given a well balanced anticonstipation diet or,

if obese, a weight reducing diet may be in order. 6. Supports including corsets for the spinal column and a cane or roller bandages for the knees are often useful. 7. Occasionally, removal of obviously infected foci should be done without promise to the patient of a good result. 8. Vaccines are of debatable value and some outstanding authors believe them to be contraindicated in this condition.

In the management of senescent (hypertrophic) arthritis, physical measures are modified considerably from those used for infectious (atrophic) arthritis. Local thermal applications, particularly contrast baths, may be useful. Mild systemic heating in a tub bath or pack may be somewhat beneficial, but it should be used with caution because this form of arthritis usually occurs in the aged. Careful massage will tend to overcome the moderate stiffness of joints which characterizes hypertrophic arthritis, and the milder exercises will usually be sufficient to maintain mobility of the joints.

"Chemical Arthritis."—In treating patients who have chemical (metabolic or endocrine) arthritis, which includes such conditions as gouty arthritis and hemophilic arthritis, physical measures are of little value with the exception that they may occasionally be employed in the form of heat, sedative massage and mild exercises to produce symptomatic relief from pain and stiffness.

Neoplastic Arthritis.—In treating the patient who has a neoplastic lesion of a joint such as chondromatosis or metastatic tumors such as carcinoma or sarcoma, the only physical agent that is of any great value is the roentgen ray.

Miscellaneous Forms of Arthritis.—Under this classification may be placed the various "mixed types" of arthritis as well as the functional forms of arthritis such as the "hysterical" joint or the myalgia of fatigue and exhaustion. Physical measures, particularly the more spectacular ones, may prove of great value in conjunction with proper psychotherapy in the treatment of the so-called hysterical joint. With proper suggestion, any tangible form of treatment may provide the necessary means of effecting a cure of the hysteria. In myalgia of fatigue, applications of heat followed by massage will remove products of fatigue and hasten the restoration of function.

CONCLUSIONS

The various forms of physical therapy play an extremely important part in the modern treatment of diverse types of arthritis. Most of these physical measures can, with a little ingenuity, be applied in the patient's own home. It is essential that the physician who employs such physical measures should have in mind a workable classification of the arthritides, that the diagnosis be properly established and classified and that a carefully thought out general program of treatment be outlined. Physical treatment is only one phase of the general program, but it is perhaps the most important phase. The various forms of physical treatment should be applied only as indicated for the particular type of arthritis encountered. More extensive employment of the simpler forms of physical therapy by medical practitioners in general should unquestionably be of great benefit to the many unfortunate sufferers from this protean and ubiquitous disease.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, AUGUST 24, 1940

THE PLATFORM OF THE AMERICAN MEDICAL ASSOCIATION

The American Medical Association advocates:

1. The establishment of an agency of the federal government under which shall be coordinated and administered all medical and health functions of the federal government exclusive of those of the Army and Navy.
2. The allotment of such funds as the Congress may make available to any state in actual need, for the prevention of disease, the promotion of health and the care of the sick on proof of such need.
3. The principle that the care of the public health and the provision of medical service to the sick is primarily a local responsibility.
4. The development of a mechanism for meeting the needs of expansion of preventive medical services with local determination of needs and local control of administration.
5. The extension of medical care for the indigent and the medically indigent with local determination of needs and local control of administration.
6. In the extension of medical services to all the people, the utmost utilization of qualified medical and hospital facilities already established.
7. The continued development of the private practice of medicine, subject to such changes as may be necessary to maintain the quality of medical services and to increase their availability.
8. Expansion of public health and medical services consistent with the American system of democracy.

PLASMA PROTEINS

The role assumed by the proteins of the plasma in physicochemical relationships and in immunologic phenomena of the blood has brought to these constituents more attention than has been given most of the other proteins of the body. Yet the vast amount of experimental work has not provided a clear picture of their formation and fate in the organism. Research work of the past few years has greatly elucidated some aspects of the problem and has afforded at least a working hypothesis with respect to other more obscure phases of the subject. A recent review by Madden and Whipple¹ clearly reflects the present status of our knowledge bearing on the source, production and utilization of plasma proteins.

Although there is evidence that the albumin, globulin and fibrinogen factors of plasma are not as sharply defined as was once supposed (indeed, it seems probable

that they all form part of a single loosely bound protein system) it is practical to consider these fractions individually as they do possess a certain independent importance in biologic reactions. With regard to the site of origin of the proteins of the plasma, the Rochester investigators are convinced that the liver is of primary importance. The production of fibrinogen seems to be definitely dependent on liver function. Damage to the liver is accompanied by a fall in the fibrinogen content of the blood, and regeneration and repair of the liver result in a return of the blood fibrinogen to its normal level.² However, the question of the site of origin of the albumin and globulin of the plasma is more perplexing; almost all the organs of the body have been implicated in this connection. Both clinical and experimental evidence point to the liver as the site of albumin and globulin formation,³ although apparently at least some of the globulin may be formed in cells elsewhere in the body.⁴

While the body has the power of synthesizing proteins, it must be supplied with the proper building material. Hypoproteinemia and edema due to malnutrition illustrate the ultimate dependence of the plasma proteins, like other similar compounds in the body, on exogenous sources. Experimental investigations with animals indicate, moreover, that not only the quantity but also the quality of food protein is of significance in the regeneration of plasma proteins. Although the products of hydrolysis of food proteins normally enter the blood after absorption from the intestine, it is noteworthy that the parenteral administration of protein hydrolysates has been investigated.⁵ The possible practical value of the intravenous administration of the nitrogen required by the body over short periods, including that for plasma protein formation, has been indicated,⁵ and further study of this problem is certainly warranted.

Ample evidence supports the belief that there is a reserve store of building material for plasma protein in the body. That the protein of blood plasma is regenerated even during a fasting period after acute depletion by bleeding was first observed early this century by Morawitz. Since that time other investigators, particularly Whipple and his associates,⁶ have extensively studied the regeneration of plasma proteins in dogs subjected to plasmapheresis, a procedure involving bloodletting accompanied by the reinjection of blood corpuscles suspended in a modified Locke's solution. Apparently the plasma protein reserves are a part of the general body stores, since they may be depleted

2. Whipple, G. H., and Hurwitz, S. H.: *J. Exper. Med.* **13**: 136, 1911. Schultz, E. W.; Nicholes, J. K., and Schaeffer, J. H.: *Am. J. Path.* **1**: 101 (Jan.) 1925.

3. Knutti, R. E.; Erickson, C. C.; Madden, S. C.; Rekers, P. E., and Whipple, G. H.: *J. Exper. Med.* **65**: 455 (March) 1937. Kerr, W. J.; Hurwitz, S. H., and Whipple, G. H.: *Am. J. Physiol.* **47**: 379 (Dec.) 1918. Butt, H. R.; Snell, A. M., and Keys, Ancel: *Plasma Protein in Hepatic Disease*, *Arch. Int. Med.* **63**: 143 (Jan.) 1939.

4. Sabin, F. R.: *J. Exper. Med.* **70**: 67 (July) 1939.

5. Elman, Robert, and Weiner, D. O.: *Intravenous Alimentation*, *J. A. M. A.* **112**: 796 (March 4) 1939.

6. Madden, S. C.; Winslow, P. M.; Howland, J. W., and Whipple, G. H.: *J. Exper. Med.* **65**: 431 (March) 1937.

1. Madden, S. C., and Whipple, G. H.: *Physiol. Rev.* **20**: 194 (April) 1940.

by a low protein diet and by fasting. The question of protein storage is, of course, more complex than that of fat or carbohydrate storage, for while fat depots and glycogen may be readily recognized as storage materials it is questionable whether "stored protein" exists as a physically demonstrable entity comparable to fat or carbohydrate stores. Nevertheless, as pointed out by Madden and Whipple, there is protein which may be given up by one organ or tissue under certain conditions without interfering with functions of the organ or of the body. In the light of present evidence it would seem, moreover, that plasma protein does not remain static after being elaborated but rather participates in a dynamic equilibrium with the reserve protein of the body, as suggested by Madden and Whipple. The plasma proteins are thus only a part of a balanced system wherein a steady "ebb and flow" exists between them and other proteins of the body.

THE SUPERIOR PULMONARY SULCUS TUMOR OF PANCOAST

Pancoast¹ reported in 1924 three cases of what seemed to be a new entity among intrathoracic tumors. The neoplasms occurred at a definite location at the thoracic inlet, were characterized by pain around the shoulder and down the arm, Horner's syndrome and atrophy of the muscles of the hand, roentgenologic evidences of a homogeneous shadow at the apex, always more or less local rib destruction and often vertebral infiltration. The name "superior pulmonary sulcus tumor" has been given to this new growth because the term implies its approximate location and the "lack of origin from the lung, pleura, ribs or mediastinum." Pancoast² was able to add four more cases in 1932. A biopsy in one of these cases revealed an epithelioid carcinoma. Pancoast advanced the hypothesis that the tumor had its origin from an embryonic remnant of the fifth branchial pouch.

This concept of a new specific clinical and pathologic entity created controversy. The majority of the observers pointed out that the syndrome described by Pancoast could be initiated by a great variety of conditions in the upper thoracic aperture. Other observers, while impressed with the specificity of the syndrome, argued that scientific proof of the branchial origin of the tumor was not furnished. Browder and De Veer³ were particularly emphatic in denying the specificity of both the syndrome and the tumor and challenged the propriety of the term "superior pulmonary sulcus." They reported five cases which illustrate symptoms of malignant tumor located in the region of the pulmonary apex and upper mediastinum. Postmortem studies demonstrated

that three of the cases were primary carcinomas of the lung, one a metastatic hypernephroma and one a tumor of the thymus. Tobias reported five apical tumors in patients with the symptoms described by Pancoast. Four of these cases were primary carcinomas of the apex of the lung and the fifth a metastatic tumor from carcinoma of the stomach. Other observers recognized the existence of an apical tumor possessing characteristics which set it apart from the tumors commonly occurring in this region but were skeptical of the branchial origin of such tumors. Thus Jacox⁴ reported a case which fulfilled all the criteria of the entity described as superior pulmonary sulcus tumor but which presented the appearance on microscopic study of a mucin-secreting adenocarcinoma suggesting bronchogenic origin. Jacox advanced the view that superior pulmonary sulcus tumor is an atypical form of primary bronchogenic carcinoma. Steiner and Byron⁵ reported three cases of primary apical lung carcinoma with symptoms closely resembling those described by Pancoast.

In a recent contribution Morris and Harken⁶ present an analytic review of the literature on the subject and eight personal cases. They conclude that the Pancoast tumor is a specific entity. They point out that, while the Pancoast syndrome is not specific per se and can be initiated by a variety of conditions, the Pancoast tumor is a definite pathologic entity: it is a specific malignant neoplasm with a histologic picture of epidermoid carcinoma, and it is characterized grossly by its "lack of origin from lung, pleura, ribs or mediastinum." They insist, however, on certain criteria before accepting the tumor as a superior pulmonary sulcus tumor: (1) clinical evidence of an apical tumor expressed in terms of pressure destruction effects on adjacent nerve and osseous tissues (Hare's syndrome), (2) histologic evidence of epithelioma and (3) pathologic evidence based on postmortem studies which are competent to prove (a) the extrapulmonary character of the tumor, (b) its lack of origin from lung, pleura, ribs or mediastinum and (c) its primary nature as determined by exclusion of all possible sources of metastatic origin. According to these authors four cases reported in the literature answer these demands. These cases are one by Clark,⁷ two by Fried⁸ and one by Graef and Steinberg.⁹ These, with their own three cases, make a total of only seven authentic cases thus far reported. In a recent article two Russian clinicians, Melnikov and Derman,¹⁰ likewise point out

4. Jacox, H. W.: Superior Pulmonary Sulcus Tumor, *J. A. M. A.* **103**: 84 (July 14) 1934.

5. Steiner, P. E., and Byron, F. F.: Primary Lung Carcinoma, *Am. J. Cancer* **22**: 776 (Dec.) 1934.

6. Morris, J. H., and Harken, D. E.: The Superior Pulmonary Sulcus Tumor of Pancoast in Relation to Hare's Syndrome, *Ann. Surg.* **112**: 1 (July) 1940.

7. Clark, B. E.: Superior Pulmonary Sulcus Tumor (Pancoast), *abstr. Am. J. Path.* **10**: 693 (Sept.) 1934.

8. Fried, B. M.: Sternoclavicular Branchioma, *Am. J. Cancer* **25**: 738 (Dec.) 1935.

9. Graef, Irving, and Steinberg, Israel: Superior Pulmonary Sulcus Tumor, *Am. J. Roentgenol* **36**: 293 (Sept.) 1936.

10. Melnikov, A. V., and Derman, G. L.: Tumors of the Upper Thoracic Aperture, *Vrach. delo*, 1940, No. 2, p. 84.

1. Pancoast, H. K.: Importance of Careful Roentgen Ray Investigations of Apical Chest Tumors, *J. A. M. A.* **83**: 1407 (Nov. 1) 1924.

2. Pancoast, H. K.: Superior Pulmonary Sulcus Tumor, Tumor Characterized by Pain, Horner's Syndrome, Destruction of Bone and Atrophy of Hand Muscles, *J. A. M. A.* **99**: 1391 (Oct. 22) 1932.

3. Browder, Jefferson, and DeVeer, J. A.: The Varied Pathologic Basis for the Symptomatology Produced by Tumors in the Region of the Pulmonary Apex and Upper Mediastinum, *Am. J. Cancer* **24**: 507 (July) 1935.

the necessity of differentiating between the Pancoast syndrome and the Pancoast tumor. They report three cases, one of which, with a careful postmortem study, answers all the criteria set forth by Morris and Harken.

Certain clinical features about the Pancoast syndrome may be emphasized as characteristic. These are the onset with excruciating pain about the shoulder and the apex of the axilla, the constant and early development of the Horner syndrome, and the constant invasion of the first, second and third ribs and of the vertebrae. The tumor appears to be particularly malignant and refractive to radiation. The surgical removal of such tumors, particularly when well advanced, is difficult, if not impossible. Pain is best controlled by a cervical chordotomy or section of the sensory roots.

Current Comment

MEDICAL LITERATURE AND THE BLOCKADE

Gradually since the end of May there has been a diminution in the receipt of medical publications coming from abroad to the *Quarterly Cumulative Index Medicus* and to the Library of the American Medical Association. The Library has been receiving in the past about 1,400 different periodicals. The most recent shipment from Germany arrived on July 22, at which time, however, only two periodicals were received. On June 26 eight periodicals came, but the last large shipment arrived on May 27. Already, therefore, some of the German publications are more than three months in arrears. Some Austrian weekly publications which used to arrive every seven to ten days have not been received since early in June. Polish and Czechoslovakian journals have not been received for many months. Sixteen such publications have been dropped from the *Index* since the beginning of 1940. Within the last two months official notification has been received of the suspension of eleven French medical periodicals. From Italy the last weekly receipts were at the end of June and few Italian publications have come since that date. The publications from Great Britain for June and July are being received with perhaps a very slight delay. Some publications dated July 1940 arrived in Chicago as late as August 17. The effects of the difficulty in the receipt of foreign periodicals are reflected in the current medical literature department of THE JOURNAL, from which no doubt readers have noticed the absence of some of the foreign publications which used to be listed and abstracted regularly. The *Quarterly Cumulative Index Medicus* will likewise show some diminution in size in the next issue. In the issue for January to March 1940, 8,160 articles were indexed from the foreign literature. In the issue for April to June 1940, 7,590 articles were indexed—a decline of 570 articles. The period July to September will be closed shortly; up to August 19, however, only 3,415 articles have been listed—a decline of more than 50 per cent in the material available. No doubt some of the decline in the foreign medical literature is due to

difficulties concerned with the securing of paper and printing supplies and with the fact that many men are engaged in military activities. Unquestionably also the blockade on shipping has prevented the transmission to the United States of some of the periodicals that are being published.

ABSENCE OF ACQUIRED TETANUS IMMUNITY IN MAN

According to Lahiri¹ of the Immunity Research Laboratory, Calcutta, India, human beings do not acquire a demonstrable immunity against tetanus toxin as a result of environmental exposure. Many individuals acquire specific antitoxins as a result of subclinical infections, as demonstrated with diphtheria,² scarlet fever³ and staphylococcal infections.⁴ In each of these diseases statistical evidence suggests a close correlation between exposure and acquired antitoxic immunity.⁵ A crucial test of the ability of man to acquire a similar immunity against tetanus toxin was attempted by the Calcutta immunologists. Such a test would presumably be afforded by titrations of the antitoxin content of the blood of individuals living in environments known to be highly contaminated with the tetanus bacillus. Lahiri therefore made antitoxin titrations on twenty grooms in constant attendance on horses used in the production of therapeutic antisera and on five laboratory assistants who had handled tetanus toxin and living cultures of *Clostridium tetani* almost daily for several years. The grooms walk barefooted, often with cuts, pricks and abrasions, throughout the yard used by the horses, which yard is known to be highly contaminated with toxigenic strains of the tetanus bacillus. Most of the laboratory workers had had numerous accidental cuts or injuries of the fingers while at work with toxigenic cultures. Blood samples drawn from each of the twenty-five highly exposed individuals were titrated for their tetanus antitoxic content, guinea pigs being used as the experimental animal. All control guinea pigs injected with minimal lethal doses of tetanus toxin developed contractures within twenty-four hours and died between the seventy-second and the eighty-fourth hour. Within the limits of the experimental error, identical results were obtained with parallel injections of toxin incubated with massive doses of the twenty-five human serums. From these negative results Lahiri concludes that there was not a detectable trace of tetanus antitoxin in the blood of any one of his twenty-five highly exposed subjects. From this he concludes that there is no subclinical form of tetanus infection. All of his subjects presumably were frequently infected with living organisms or spores but under conditions not suitable for germination or toxin production. If even minute doses of the toxin had been formed, antitoxins would have resulted.⁶ Clinically, therefore, there is no environmentally acquired immunity to tetanus.

1. Lahiri, D. C.: Absence of Specific Antitoxin in Persons Exposed to Risk of Tetanus Infection, *Indian J. M. Res.* 27: 581 (Oct.) 1939.
2. Zingher, Abraham: The Schick Test Performed on More Than 150,000 Children in Public and Parochial Schools in New York, *Am. J. Dis. Child.* 25: 392 (May) 1923.
3. Zingher, Abraham: Dick Test and Active Immunization with Scarlet Fever Toxin, *Am. J. Pub. Health* 14: 955 (Nov.) 1924.
4. Ramon, Gaston: *Rev. d'immunol.* 2: 305, 1936.
5. Topley, W. W. C., and Wilson, G. S.: *Principles of Bacteriology and Immunology*, ed. 2, Baltimore, William Wood & Co., 1936, p. 843.
6. Ramon, Gaston: Tetanus Anatoxin and Vaccination Against Tetanus, *Ann. d. méd.* 42: 358 (Oct.) 1937.

MEDICAL PREPAREDNESS

In this section of The Journal each week will appear official notices by the Committee on Medical Preparedness of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medical preparedness, and such other information and announcements as will be useful to the medical profession.

MILITARY AND NAVAL PERSONNEL

Physicians who are interested in obtaining information regarding opportunities for military or naval service may consult United States army corps area commanders and corps area surgeons, and also medical officers in charge in naval districts:

Present U. S. Army Corps Area Commanders and Corps Area Surgeons

FIRST CORPS AREA.—Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut.

Headquarters: Boston Army Base, Boston.

Corps Area Commander: Major Gen. James A. Woodruff.

Corps Area Surgeon: Col. John J. Reddy, M. C.

SECOND CORPS AREA.—New York, New Jersey, Delaware, Puerto Rico.

Headquarters: Governors Island, New York.

Corps Area Commander: Lieut. Gen. Hugh A. Drum.

Corps Area Surgeon: Col. Frank W. Weed, M. C.

THIRD CORPS AREA.—Pennsylvania, Maryland, Virginia, District of Columbia.

Headquarters: U. S. Post Office and Court House, Baltimore.

Corps Area Commander: Major Gen. James K. Parsons.

Corps Area Surgeon: Col. Henry C. Pillsbury, M. C.

FOURTH CORPS AREA.—Alabama, Florida, Georgia, Louisiana, Mississippi, North and South Carolina, Tennessee.

Headquarters: Post Office Building, Atlanta, Ga.

Corps Area Commander: Lieut. Gen. Stanley D. Embick.

Corps Area Surgeon: Col. Chester R. Haig, M. C.

FIFTH CORPS AREA.—Ohio, Kentucky, Indiana, West Virginia.

Headquarters: Fort Hayes, Columbus, Ohio.

Corps Area Commander: Major Gen. Campbell B. Hodges.

Corps Area Surgeon: Col. Will L. Pyles, M. C.

SIXTH CORPS AREA.—Michigan, Wisconsin, Illinois.

Headquarters: Post Office Building, Chicago.

Corps Area Commander: Lieut. Gen. Stanley H. Ford.

Corps Area Surgeon: Col. Paul W. Gibson, M. C.

SEVENTH CORPS AREA.—Missouri, Kansas, Iowa, Nebraska, Minnesota, North and South Dakota, Arkansas.

Headquarters: New Federal Building, Fifteenth and Dodge streets, Omaha.

Corps Area Commander: Major Gen. Percy P. Bishop.

Corps Area Surgeon: Col. Herbert C. Gibner, M. C.

EIGHTH CORPS AREA.—Texas, Oklahoma, Colorado, New Mexico, Arizona.

Headquarters: Fort Sam Houston, San Antonio, Texas.

Corps Area Commander: Major Gen. Herbert J. Brees.

Corps Area Surgeon: Col. W. Lee Hart, M. C.

NINTH CORPS AREA.—Washington, Oregon, Idaho, Montana, Wyoming, Utah, Nevada, California, Alaska.

Headquarters: Presidio of San Francisco.

Corps Area Commander: Lieut. Gen. John L. DeWitt.

Corps Area Surgeon: Col. Condon C. McCornack, M. C.

Colonel Haig is temporarily acting as Surgeon of the Fourth Corps Area. Col. James E. Baylis will replace him in September.

All of these officers are subject to change of station. It is therefore advisable, when addressing communications, simply to address "The Corps Area Commander" or "The Corps Area Surgeon" of the particular corps area concerned, rather than the individual by name.

Naval Districts and Medical Officers in Charge

FIRST NAVAL DISTRICT.—Maine, New Hampshire, Vermont, Massachusetts, Rhode Island.

Headquarters: Boston.

Medical Officer in Charge: Capt. John L. Neilson, M. C.

THIRD NAVAL DISTRICT.—Connecticut, New York, northern part of New Jersey including counties of Mercer and Monmouth, and all counties north thereof.

Headquarters: New York.

Medical Officer in Charge: Capt. Edward C. White, M. C.

FOURTH NAVAL DISTRICT.—Pennsylvania, southern part of New Jersey including Philadelphia, counties of Burlington, Ocean and all counties south thereof; Delaware.

Headquarters: Philadelphia.

Medical Officer in Charge: Capt. John B. Kaufman, M. C.

FIFTH NAVAL DISTRICT.—Maryland, West Virginia, Virginia and the counties of Currituck, Camden, Pasquotauk, Gates, Perquimans, Chowan and Dare in North Carolina.

Headquarters: Naval operating base at Norfolk, Va.

Medical Officer in Charge: Capt. William A. Angwin, M. C.

SIXTH, SEVENTH, AND EIGHTH NAVAL DISTRICTS.—

(Sixth) South Carolina, Georgia, and North Carolina except the counties of Currituck, Camden, Pasquotauk, Gates, Perquimans, Chowan and Dare.

(Seventh) Florida, except counties west of Apalachicola River.

(Eighth) Florida, counties west of Apalachicola River, Alabama, Tennessee, Louisiana, Mississippi, Arkansas, Oklahoma, Texas.

Headquarters: Charleston, S. C.

Medical Officer in Charge: Capt. Thomas W. Raison, M. C.

NINTH NAVAL DISTRICT.—Ohio, Michigan, Kentucky, Indiana, Illinois, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas.

Headquarters: Great Lakes, Ill.

Medical Officer in Charge: Capt. Andrew B. Davidson, M. C.

TENTH NAVAL DISTRICT.—Puerto Rico and Virgin Islands.

Headquarters: San Juan, P. R.

Medical Officer in Charge: Comdr. James G. Dickson, M. C.

ELEVENTH NAVAL DISTRICT.—New Mexico, Arizona, southern part of California, including counties of Santa Barbara, Ventura, Los Angeles, and San Bernardino and all counties south thereof.

Headquarters: San Diego.

Medical Officer in Charge: Capt. David C. Cather, M. C.

TWELFTH NAVAL DISTRICT.—Colorado, Utah, Nevada, northern part of California including counties of San Luis Obispo, Kern, Inyo and all counties north thereof.

Headquarters: San Francisco.

Medical Officer in Charge: Capt. Edward U. Reed, M. C.

THIRTEENTH NAVAL DISTRICT.—Washington, Oregon, Idaho, Montana, Wyoming, Alaska.

Headquarters: Seattle.

Medical Officer in Charge: Capt. Harry A. Garrison, M. C.

FOURTEENTH NAVAL DISTRICT.—Hawaiian Islands and islands to westward including Midway, Kure, Wake, Johnson, Sand Islands and Kingman Reef.

Headquarters: Pearl Harbor, T. H.

Medical Officer in Charge: Capt. Robert E. Stoops, M. C.

FIFTEENTH NAVAL DISTRICT.—Panama Canal Zone.

Headquarters: Canal Zone.

Medical Officer in Charge: Capt. Walter C. Espach, M. C.

SIXTEENTH NAVAL DISTRICT.—Philippine Islands.

Headquarters: Cavite, P. I.

Medical Officer in Charge: Capt. Clyde B. Camerer, M. C.

ORGANIZATION SECTION

OFFICIAL NOTES

THE CLEVELAND SESSION

To Be Held During the First Week in June

The Board of Trustees has selected June 2-6, 1941, as the date for the Ninety-Second Annual Session of the American Medical Association.

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Change in Status.—S. J. Res. 286 has passed the Senate and the House with amendments, proposing to authorize the President, during the period ending June 30, 1942, to order into active military service, in the Western Hemisphere and in the territories and possessions of the United States, for a period of one year members and units of the National Guard, Organized Reserve and retired personnel of the Army.

Bills Introduced.—S. 4269, introduced by Senator Wagner, New York, proposes to amend the Social Security Act and the Internal Revenue Code so as to extend old-age and survivor insurance benefits and unemployment benefits to, among

others, employees of nonprofit religious, charitable, scientific, educational and anticruelty organizations, except ordained ministers and members of religious orders performing their duties in such orders and student nurses and interns. H. R. 10334, introduced by Representative Elliott, California, and H. R. 10360, introduced by Representative Murdock, Arizona, propose to authorize the Surgeon General of the United States Public Health Service to allot to the several states and political subdivisions thereof and the District of Columbia federal grants-in-aid to be used for establishing and maintaining adequate measures for the prevention, treatment and control of tuberculosis among migrants, and also for studying, investigating and demonstrating methods of developing more effective measures for accomplishing that purpose, including the training of personnel. Federal funds appropriated each year, not to exceed \$1,000,000 for the fiscal year 1941, are to be allotted on the basis of (1) the migratory population, (2) the extent of the tuberculosis problem among the migratory population, (3) existing facilities for the care of tuberculosis patients and (4) the financial needs of the respective states and other areas. Necessary rules and regulations are to be prescribed by the Surgeon General, with the approval of the Federal Security Administrator and after consultation with a conference of state and territorial health officers.

MEDICAL ECONOMIC ABSTRACTS

UTAH MEDICAL AND HOSPITAL BENEFIT ASSOCIATION

The Utah Medical and Hospital Benefit Association, Inc., was organized by the Utah State Medical Association in cooperation with various hospital administrators and lay persons under the insurance laws of the state of Utah as an assessment benefit association in the early part of 1940. The Utah Medical and Hospital Benefit Association, Inc., is a nonprofit voluntary association and is subject to supervision of the commissioner of insurance of the state of Utah.

The general purpose of the association is to secure for its subscribing members medical service and hospital care and to reimburse the subscribing members for all or a portion of the cost of such medical services and hospital care according to the terms and provisions of the subscriber's contract.

The board of directors is made up of nine members, a majority of whom must be medical doctors in good standing of the Utah State Medical Association. One of the members of the board of directors who is not a member of the Utah State Medical Association must be a member of the Utah State Hospital Association. The president, first vice president and secretary of the association must be medical doctors in good standing of the Utah State Medical Association.

CONTRACTS

The Utah Medical and Hospital Benefit Association, Inc., offers two subscribers' contracts, one for partial medical and surgical reimbursement, and one for limited hospitalization expense reimbursement. It is contemplated that the benefits of the two contracts will provide complete coverage for limited reimbursement of all medical services and hospital care specified in the contracts.

The contract contains a schedule of maximum reimbursements for surgical operations and the treatment of fractures and dislocations. This schedule does not indicate the physician's fees but only the limit of reimbursement by the association to its subscribers.

If the subscriber obtains medical care for the following illnesses the association will reimburse him \$3 per physician's visit up to a maximum of \$50: pneumonia, typhoid, diabetes, not

preexisting, meningitis, coronary occlusion, tularemia and undulant fever. The association will pay \$25 reimbursement for delivery in obstetric cases when both the husband and wife have been members in good standing for one year. When the medical and obstetric cases are not hospitalized, \$5 additional will be allowed for laboratory and x-ray procedure in each case.

LIMITATIONS

No subscriber or dependent may receive more than \$100 of benefits in one year and no family more than \$300 of benefits in one year. If two or more surgical operations are performed for the same accident or illness the association will reimburse the subscriber for the one for which the largest reimbursement is payable. The association will not provide reimbursement for any conditions for which the subscriber is entitled to benefits under workmen's or veterans' compensation laws.

BENEFITS OF THE HOSPITALIZATION EXPENSE CONTRACT

A subscriber or dependent is entitled to \$4 a day for twenty-one days in any one year while he is confined as a bed patient in a hospital recognized by the medical profession as a proper institution for the care of physically disabled persons and under the care of a licensed physician. In addition an amount up to the following maximum will be provided for regularly hospitalized bed patients:

- \$ 5 for ether anesthesia
- 10 for gas anesthesia
- 15 for use of the operating room
- 20 for x-ray services, excluding roentgen therapy
- 5 for special laboratory services

LIMITATIONS

Total benefits to any one subscriber or dependent shall not be more than \$150 a year for a subscriber and one dependent, not more than \$300 for a subscriber and more than one dependent and not more than \$400 in any one family.

Payment for hospitalization for herniotomy, tonsillectomy, adenoidectomy and operations on the nasal septum and sinus is allowed only after contracts have been in effect for one year; for obstetrics, only after husband and wife have been subscribers for one year. Benefits for hospitalization for removal of tonsils or adenoids shall be for one day of twenty-four hours only.

No benefits will be furnished for conditions for which subscribers or dependents are entitled to benefit under any workmen's or veteran's compensation laws, or for pulmonary tuberculosis, acute or chronic alcoholism, acute venereal diseases, mental disorders, quarantinable diseases, drug addiction, self-inflicted injuries or for conditions resulting from unlawful acts, known preexisting deformities, illnesses or abnormalities, for rest cures and for diagnostic purposes.

ENROLMENT

Any person in the state under 65 years of age in good health may apply through a group of not less than ten persons for membership in the Utah Medical and Hospital Benefit Association, Inc. Such a group must have taken the necessary action,

Premiums

	Monthly	Quarterly	Semiannual	Annual
Medical and Surgical Reimbursement Contract				
One person	\$1.00	\$3.00	\$ 6.00	\$10.80
Two persons	1.75	5.25	10.50	18.00
Three or more persons..	2.25	6.75	13.50	24.00
Hospitalization Expense Contract				
One person	1.00	3.00	6.00	10.80
Two persons	1.75	5.25	10.50	18.00
Three or more persons..	2.25	6.75	13.50	24.00

indicating desire to make available subscription to these contracts, and have appointed a remitting agent to handle the collection of premium payments from subscribing members. Such groups to be acceptable must have been organized for some purpose other than the purchase of insurance. They may be church, social, professional, common employer, farm bureau or fraternal in nature. The subscriber may include all dependents under 19 years of age at somewhat lower premium rates. A registration fee of \$1 is required of each member when applying. A subscriber may purchase either the medical and surgical contract or the hospitalization expense contract or both.

ILLINOIS COMMITTEE ON MEDICAL BENEVOLENCE

The House of Delegates of the Illinois State Medical Society at its annual meeting, May 23, voted that certain changes be made in the constitution and by-laws to enable the society to establish a benevolent fund for indigent physicians and their widows. The plan adopted closely resembles the one which has been operating in Pennsylvania for the past thirty-seven years.

The members of the Committee on Medical Benevolence are John S. Nagel, chairman, 185 North Wabash Avenue, Chicago; Charles H. Hulick, Shelbyville, and Clarence H. Boswell, Rockford.

PURPOSES OF THE COMMITTEE

The purposes of the committee are:

1. To create a benevolence fund (a) through allocation of \$1 each year from dues of each member, (b) through gratuities, endowments and so on, and (c) through the efforts of the Women's Auxiliary to the Illinois State Medical Society.
2. To investigate cases of alleged financial difficulties on the part of members, their widows or widowers.
3. When found worthy, to appropriate regular monthly benefits not to exceed from \$25 to \$30 a month in any one case. When deemed advisable, it may appropriate more over a short period of time when rehabilitation seems probable.
4. To designate the component society secretary in each county as the county chairman to submit applications from members for benefits and then to see that a questionnaire form is properly executed to give the desired information relative to the case. The councilor of the district may assist the committee in submitting names of members, or their widows or widowers, when he believes the individual is entitled to the benefits herein prescribed.
5. When it is the opinion of the committee that the case is a worthy one and benefits should be allowed, the chairman of the committee should notify the secretary of the state medical

society, stating the amount agreed on as the regular allowance, stating the intervals at which the benefits shall be paid, so that proper vouchers may be submitted.

THE INVESTIGATIONS

When it is reported to the committee that a member or the widow or widower of a member is needy and unable to secure the necessities of life, a questionnaire form shall be submitted from the secretary's office asking for the following information:

1. A brief social history of the applicant, past and present. Data concerning reasons for being in want whenever possible, and all other pertinent information which will enable the committee to take the proper action.
2. A brief financial history including present assets and income, sources and amount.
3. Disbursing of present resources—(rent, food, clothing, and so on).
4. Statements as to probable permanence of the present distress.
5. Any possible sources of assistance, such as (a) relatives, (b) friends, (c) fraternal organizations, (d) insurance and (e) pensions.
6. Have all sources of help been solicited?
7. Additional information. Means by which influence might be exerted to find employment or some other source of income. Is there a possibility of rehabilitation? (With moderate financial assistance over a short period of time, would it be possible for the applicant to become self supporting?)

PROCEDURE

Requests from members or their widows or widowers for assistance, if submitted to the secretary, shall be referred to the committee promptly. At the same time a questionnaire form will be submitted to the applicant or to the county society secretary, or to the councilor if the information is submitted by him. All possible information which will aid the committee in determining the eligibility for assistance, the amount actually needed or, if rehabilitation through short time payments is probable, should be submitted promptly.

Each case will receive the proper consideration by the entire committee, which shall pass final judgment on (1) eligibility for aid, (2) the amount of aid and (3) whether for a short time or permanently.

The decision of the committee shall be final and there will be no higher authority within the society to whom appeals from decisions of the committee can be referred.

In the event that additional income is received and the individual is no longer eligible for further benefits, the county society secretary or the councilor who submitted the data should notify the committee of these facts promptly.

The Medical Benevolence Fund shall be subject to an annual audit as are other funds of the Illinois State Medical Society, although merely the amount of the fund, the payments made during the year, the additions to the fund and the interest from investments shall be mentioned. Only the income from the fund shall be used to pay benefits. The names of beneficiaries shall not appear in the annual audit nor shall they be mentioned in the annual report of the committee to the house of delegates.

The secretary of the state medical society shall maintain a separate file for all correspondence relative to beneficiaries, amounts paid, investigations and minutes of meetings of the committee, which shall be a closed file and not open to inspection by others than members of the committee, the auditor or a regularly designated committee of the house of delegates.

The council of the Illinois State Medical Society in regular session on Aug. 4, 1940, approved the procedure, and the committee was instructed to make the necessary arrangements to function immediately.

The First Twelve Years.—Human material is easy to shape at birth and through young childhood. It soon begins to set, and by the time puberty is reached the chance of all basic molding is gone. If I can control training until the twelfth year, I am confident of changing radically the behavior patterns and personality of any child.—Hohman, Leslie B., *As the Twig is Bent*, New York, Macmillan Company, 1940.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARKANSAS

Changes in Health Officers.—Dr. Hollis H. Buckelew, Little Rock, has been assigned as director of the Garland County health unit.—Dr. Kirk T. Mosley has returned as director of the Miller County health unit at Texarkana after completion of his study in public health at Harvard University, Boston.—Dr. Hugh Mobley, formerly of Wilson, has been appointed health officer for White County with offices in Searcy.

Sanatorium Building Program Completed.—The Arkansas Tuberculosis Sanatorium held a dedication, July 4, to mark the completion of a building program that extended over nearly two years and involved an expenditure of about \$2,500,000. Twenty-five new building units were constructed and equipped and repairs and additions were made to all old buildings that are to remain in use. The new buildings include a new hospital with 511 beds; a building for 118 ambulant patients; a "commons" building containing dining rooms and various service units; a nurses' home for 120 persons; two employees' dormitories with a capacity of seventy-two persons each; twelve cottages for physicians and department heads; a barracks for male employees; a power plant, cannery, dairy barn, feed storage barn and a building for guinea pigs. Funds for the building program were provided by the legislature, which in 1938 appropriated \$1,400,000, and by a PWA grant of \$949,071. The original sanatorium was opened in 1910 with accommodations for sixty-four patients, with Dr. John S. Shibley as superintendent. Dr. John Stewart became superintendent on the death of Dr. Shibley and after Dr. Stewart's death in 1930 Dr. Jesse D. Riley, the present head, was appointed. At the formal dedication ceremony Dr. Riley presided; W. A. Doppler, Ph.D., New York, field director of health education of the National Tuberculosis Association, made an address entitled "Don't Fear Tuberculosis; Fight It," and Governor Carl E. Bailey spoke on the growth and value of the sanatorium.

CALIFORNIA

Dr. O. N. Andersen Goes to Stanford.—Dr. Oswald N. Andersen, assistant superintendent of Barnes Hospital, St. Louis, and previously connected with the Council on Medical Education and Hospitals, American Medical Association, Chicago, has been appointed general director of the School of Hygiene and Physical Education at Stanford University, Palo Alto, with the rank of associate professor.

COLORADO

State Medical Meeting at Glenwood Springs.—The seventieth annual session of the Colorado State Medical Society will be held in Glenwood Springs, September 12-14, at the Hotel Colorado. The guest speakers will be:

- Dr. Nathan B. Van Etten, New York, President of the American Medical Association, *An American Health Program*.
- Dr. Paul B. Magnuson, Chicago, *Treatment of Arthritis by Joint Débridement*; also *The Choice of Method of Treatment of the Neck of the Femur*.
- Dr. John H. Talbott, Boston, *Clinical Consideration of Gout and Other Arthritides*.
- Dr. Arthur E. Hertzler, Halstead, Kan., *Wound Healing*.
- Dr. Edward L. King, New Orleans, *Management of Prolonged Labor*; also *Hemorrhages in Pregnancy*.
- Dr. Tom Douglas Spies, Cincinnati, *Vitamin Therapy in Deficiency Diseases*.

Dr. Edward H. Skinner, Kansas City, Mo., will be the guest speaker at the annual banquet, Saturday evening, September 14. Among Colorado physicians who will present papers will be:

- Dr. Charles Douglas Deeds, Denver, *Recent Advances in the Diagnosis and Treatment of Heart Disease*.
- Dr. David W. Boyer, Pueblo, *The Use of Local Anesthesia in the Reduction of Fractures*.
- Dr. Osgood S. Philpott, Denver, *Trophic Ulceration Following Surgical Procedures for the Relief of Trigeminal Neuralgia*.
- Dr. Lanning E. Likes, Lamar, *New Deal Medicine Man*.
- Dr. Leonard Freeman Jr., Denver, *Thoracoscopy*.
- Col. Robert B. Hill, M. C., U. S. Army, *Fitzsimons General Hospital, Denver, Subtotal Gastrectomy*.
- Dr. Leo W. Bortree, Colorado Springs, *Physical Abnormalities Found in College Students*.

ILLINOIS

Personal.—Dr. George A. Wiltrakis, assistant managing officer and medical director of the Chicago State Hospital, has been appointed managing officer of the Alton State Hospital. He succeeds Dr. Felix W. Sokolowski, resigned. Dr. Edward Ross has been acting officer.—Dr. Charles S. Woods, Cleveland, has been appointed general superintendent of the Methodist Hospital, Peoria.—Dr. and Mrs. Stanley R. Walker, Chebanse, were entertained at a banquet, June 2, to celebrate their golden wedding anniversary and Dr. Walker's completion of fifty-one years in medical practice. Dr. Edwin S. Hamilton, Kankakee, was toastmaster.—Dr. Roy S. Bothwell, Batavia, has been elected to emeritus membership in the Illinois State Medical Society, having completed fifty years in the practice of medicine.

Conference on Poliomyelitis.—State district health officers and nurses held a special conference on poliomyelitis recently in Springfield at the call of Dr. Albert C. Baxter, director of the Illinois Department of Public Health. Drs. Sidney O. Levinson and Philip Lewin, Chicago, addressed the meeting. Dr. Levinson discussed treatment, with special emphasis on measures for prevention of crippling. Dr. Lewin described the work of the National Foundation for Infantile Paralysis and also discussed after-care of patients, including methods of splinting and physical therapy. District health officers will be prepared to assist physicians throughout the state in diagnosis and treatment, it was announced. Each district health superintendent will have at his office a supply of convalescent human serum and emergency splints so that prompt treatment may be instituted in the home as soon as the diagnosis is established.

INDIANA

Personal.—Dr. Joseph S. Skobba, a member of the staff of the Central State Hospital, Indianapolis, has been appointed superintendent of the Muscatatuck Colony at Butlerville, effective August 1. Dr. George E. Denny, who has been superintendent since 1937, has resigned because of impaired health and will return to his home in Madison, it is reported.

Changes at Indiana University.—Appointments and promotions at the Indianapolis division of the Indiana University School of Medicine, effective July 1, include:

- Dr. Charles Eli Cottingham, associate in mental and nervous diseases, to be associate emeritus.
- Dr. Alexander T. Ross, Wahjamega, Mich., assistant professor of neurology and psychiatry.
- Drs. Jacob K. Berman, Robert L. Glass, Cleon A. Nafe and John E. Owen, from assistant to associate professors of surgery.
- Dr. William V. Woods, to assistant professor of orthopedic surgery.
- Dr. Harold M. Trusler, to associate professor of surgery.
- Dr. Dennis S. Megenhardt, to associate in plastic surgery.
- Dr. Carl P. Huber, to associate professor of obstetrics.
- Dr. Robert M. Dearmin, to assistant professor of otolaryngology.
- Dr. Bernard J. Larkin, to clinical professor of ophthalmology.
- Dr. Arthur F. Echternacht, to assistant professor of radiology and roentgenologist to university hospitals.

Dr. Alois B. Graham, chairman of the division of gastroenterology and professor of surgery, will become professor emeritus of surgery. Dr. Joseph Warren Ricketts, clinical professor of surgery, will succeed him as chairman of the division.

KENTUCKY

Personal.—Dr. John Walker Moore, dean and professor of medicine, University of Louisville School of Medicine, Louisville, received the honorary degree of doctor of science from Davidson College, Davidson, N. C., recently.

Meeting of Health Officers.—Reuben L. Kahn, Sc.D., director of laboratories, University Hospital, and assistant professor of bacteriology, University of Michigan Medical School, Ann Arbor, and Dr. Vincil Rogers Deakin, assistant professor of clinical genito-urinary surgery, Washington University School of Medicine, St. Louis, were guest speakers at the annual meeting of city and county health officers in Louisville, July 29-31.

Society News.—Hopkins County was host to the second councilor district medical society in Madisonville, June 28, with the following speakers, all of Louisville: Drs. Charles M. Edelen, on "Surgery of Trauma"; Samuel A. Overstreet, "Cancer of the Stomach"; John Keller Mack, "Tuberculosis in Children," and Charles Dwight Townes, who presented a motion picture on ophthalmic surgery. Dr. Austin F. Finley, Madisonville, presented case reports.—Dr. Willis P. McKee, Eminence, addressed the Henry County Medical Society, New Castle, in June on "Gonorrhea in the Male."—The sixth and seventh councilor districts met at Harrodsburg, June 27, with

the following speakers: Drs. George E. Lowrey, Harrodsburg, on "A Short Review of Tularemia"; Frank M. Stites Jr., Louisville, "Proper Evaluation of Gastric Symptoms"; David Y. Keith, Louisville, "Use of Radiation in Skin Neoplasms and Inflammations"; Charles A. Vance, Lexington, "Intestinal Obstruction," and Lee Palmer, Louisville, "Sulfa-pyridine in the Treatment of Pneumonia in Children."

MASSACHUSETTS

Intern's License Limited to Three Years.—The Massachusetts law permits "limited registration" to interns or medical officers of hospitals, entitling them to practice medicine only in the hospital or other institution designated in the special certificate or outside if under proper supervision by registered physicians. This registration has previously been for such time as the board of registration prescribed. On June 27, the Massachusetts Board of Registration in Medicine voted to limit the period for which an intern's license may be issued to three years. It is the opinion of the board that if a physician wishes to practice more than three years in the state he should be registered as a qualified physician, which requires an examination.

Personal.—Dr. Charles Purcell Roberts is now medical director of the health service of Massachusetts Memorial Hospitals, Boston University School of Medicine, under the direction of Dr. Chester S. Keefer, it is reported.—Dr. Elliott P. Joslin, clinical professor of medicine emeritus, Harvard Medical School, Boston, received the honorary degree of doctor of science at the annual commencement of Harvard University, June 20.—Dr. Walter B. Cannon, Boston, received the honorary degree of doctor of laws at the June commencement of Washington University, St. Louis, where he delivered the principal address.—At the annual meeting of the state board of registration in medicine, July 11, Dr. Francis R. Mahony, Lowell, was reelected chairman for the coming year and Dr. Stephen Rushmore, Boston, reelected secretary.—Dr. Rafe Nelson Hatt, Longmeadow, has been appointed a member of the state public health council for a five year term, succeeding Dr. Charles F. Lynch, Springfield, whose term expired.

MICHIGAN

Inspection of Cabin Camps and Resorts.—A sanitary inspection of cabin camps, trailer camps, resorts and other summer recreation centers in Michigan is rapidly being completed, according to the state department of health, August 1. The camps and resorts meeting the sanitary requirements outlined by the state will now be marked by a large black and white roadside sign reading "sanitation approved" in order that the visitors will know where sanitary accommodations are available. The resorts are being classified in three types according to the quality of the sanitary facilities offered: Type 1 includes those having complete modern facilities, including hot and cold running water, flush toilets, electric lights and so on; type 2 may have some of these facilities, but not all, and type 3 will have safe water supplies and sewage disposal systems, but these need not be of the most modern type. All the resorts posted with "sanitation approved" signs will be safe from a health standpoint, it was stated. It is planned to make a directory of approved resorts available to the public.

NEW YORK

Annual Meeting of School Physicians.—Dr. William E. Ayling, Syracuse, was elected president of the New York State Association of School Physicians at the annual conference held at Saratoga Springs, June 24. Drs. Edgar Bieber, Dunkirk, and Clara Adele Brown, Oswego, were elected vice president and secretary, respectively. The speakers included Drs. Elmer H. Ormsby, Amsterdam, on "The Physical Examination of School Personnel"; Lee S. Preston, Oneida, "Laboratory Studies On and Intensive Follow-Up of High School Athletes," and Daniel J. Kelly, Pd.D., superintendent of schools, Binghamton, "Sex Education and the Schools."

Semicentennial of Biological Laboratory.—The Biological Laboratory of the Long Island Biological Association, Cold Spring Harbor, celebrated its semicentennial June 29. Addresses were made by Arthur W. Page, president of the association; Harold C. Urey, Ph.D., professor of chemistry, Columbia University, New York, and Robert Cushman Murphy, D.Sc., New York, of the American Museum of Natural History. Exhibits were shown at the John D. Jones Laboratory, including, among others, electric potentials of the electric eel, the living frog heart and a marine algal cell, and the application of electrophoresis to protection against the allergies.

New York City

Training in Forensic Medicine.—New York University College of Medicine makes available each year to a few physicians an opportunity to secure specialized training in forensic medicine, according to an announcement. The training affords an opportunity to work with the medical examiners of New York and Essex County, N. J., and the chief toxicologist of New York. Those interested in learning more about the work may obtain the information from the office of the dean, 477 First Avenue, New York.

The Ledyard Fellowship for 1941.—Applications for the Lewis Cass Ledyard Jr. Fellowship, which was established in 1939 at the New York Hospital and Cornell University Medical College, should be in the hands of the committee before December 15. The fellowship amounts to about \$4,000, of which \$3,000 will be a stipend and \$1,000 may be used for supplies or expenses of research in medicine and surgery or in any closely related field. Preference will be given to younger applicants who are graduates in medicine and who have demonstrated fitness to carry on original research of high order. Applications should be addressed to The Committee of the Lewis Cass Ledyard Jr. Fellowship, The Society of the New York Hospital, 525 East Sixty-Eighth Street, New York.

Staff Changes at Rockefeller Institute.—The board of scientific directors of the Rockefeller Institute for Medical Research announces promotions and appointments effective on or after July 1. The promotions are:

Associate member to member: Duncan A. MacInnes, Ph.D., Dr. Richard E. Shope and Wendell M. Stanley, Ph.D.

Associate to associate member: Moses Kunitz, Ph.D., and Alfred E. Mirsky, Ph.D.

Assistant to associate: Dr. Douglas A. Macfadyen and William Trager, Ph.D.

Fellow to assistant: Armin C. Braun, Ph.D., Malcolm S. Ferguson, Ph.D., Birdsey Renshaw, Ph.D., and Dr. William C. Spring Jr.

New appointments are as follows:

Assistants: Gail L. Miller, Ph.D., Howard A. Schneider, Ph.D., and Dr. Armine T. Wilson.

Fellows: James A. Baker, Ph.D., Claude A. Knight Jr., B.S., Kermit W. Kreitlow, Ph.D., Margaret R. McDonald, Ph.D., and Dr. Walter Schlesinger.

Faculty Changes—Professor Loewi Comes to New York University.—The council of New York University announces the appointment of Dr. Otto Loewi, for many years director of the faculty of pharmacology at the University of Graz, Austria, and co-winner of the Nobel Prize in medicine and physiology in 1936, as research professor of pharmacology. Dr. Daniel B. Kirby, assistant clinical professor of ophthalmology at Columbia University College of Physicians and Surgeons, has been appointed professor of ophthalmology; Dr. Bernhard Dattner, assistant clinical professor of neurology, and Dr. Howard C. Taylor Jr., associate professor of obstetrics and gynecology. Dr. Edward R. Maloney, professor of dermatology and syphilology and since September 1938 head of the department, has been made professor emeritus and Dugald E. S. Brown, Ph.D., assistant professor of physiology, resigned to become professor of physiology at the New York University College of Dentistry. In addition, the following promotions were announced:

Dr. Samuel Brock, to be professor of neurology.
Dr. Samuel Bernard Wortis, associate professor of neurology.
Dr. Harry Bakwin, associate professor of pediatrics.
Dr. Walter H. McNeill Jr., associate professor of urology.
Dr. Leo Spiegel, clinical professor of dermatology and syphilology.
Dr. James S. Hanley, assistant professor of otorhinolaryngology.
Dr. Aaron Bell, assistant clinical professor of neurology.
Dr. Mary E. O'Sullivan, assistant clinical professor of neurology.
Dr. John C. McCauley Jr., assistant professor of orthopedic surgery.
Dr. Philip Paley, assistant clinical professor of orthopedic surgery.
Dr. William A. Walker, assistant clinical professor of orthopedic surgery.
Dr. Katharine G. Dodge, assistant professor of pediatrics.
Dr. Rosa Lee Nemir, assistant professor of pediatrics.
Dr. Robert S. Hotchkiss, assistant professor of urology.
Dr. Ruth M. Bakwin, assistant clinical professor of pediatrics.
Dr. Lester Breidenbach, assistant clinical professor of surgery.
Dr. Elmer I. Huppert, assistant clinical professor of surgery.
Dr. Kenneth M. Lewis, assistant clinical professor of surgery.
Dr. William M. Dick, assistant clinical professor of otorhinolaryngology.
Dr. Eugene H. Moyle, assistant clinical professor of otorhinolaryngology.
Dr. James B. Shannon, assistant clinical professor of otorhinolaryngology.

NORTH CAROLINA

Faculty Appointments at New Bowman Gray School of Medicine.—Wake Forest College School of Medicine recently announced appointments to the faculty of the school, which will move to Winston-Salem, assuming the name Bowman Gray School of Medicine of Wake Forest College, when buildings are completed, probably in 1941. Dr. Howard H. Bradshaw, associate in surgery, Jefferson Medical College of

Philadelphia, has been appointed professor and director of the division of surgery; Dr. Herbert S. Wells, assistant professor of physiology, Vanderbilt University School of Medicine, Nashville, will become professor of physiology and pharmacology, and Dr. Leroy J. Butler, chief pediatrician at North Carolina Baptist Hospital, Winston-Salem, has been appointed professor of pediatrics. Others include Dr. Robert B. Lawson, instructor in pediatrics, University of Rochester School of Medicine, Rochester, N. Y., to be assistant professor of pediatrics, and Dr. George T. Harrell Jr., assistant in medicine, Duke University School of Medicine, Durham, assistant professor of medicine in charge of laboratory diagnosis. An arrangement has been made by which the University of North Carolina School of Public Health and Preventive Medicine, Chapel Hill, will teach those subjects in the Bowman Gray school. To this end the following members of the university faculty have been appointed to the Bowman Gray faculty:

Dr. Milton J. Rosenau, dean of the university school of public health, appointed lecturer in preventive medicine and public health.

Herman Glenn Baitz, Sc.D., appointed lecturer in public health.

Dr. John W. Roy Norton, appointed lecturer in preventive medicine and public health.

Dr. William Leroy Fleming, appointed lecturer in preventive medicine and public health.

Thus the university school of public health and preventive medicine, which cooperates closely with the state board of health, supplies the teaching for those subjects at the three medical schools of the state: the university, the Bowman Gray school and Duke University School of Medicine, Durham.

OREGON

State Medical Meeting at Eugene.—The sixty-sixth annual meeting of the Oregon State Medical Society will be held in Eugene, September 4-7, with headquarters at the Masonic Temple and under the presidency of Dr. Charles E. Hunt, Eugene. The meeting is planned as a postgraduate course with four guest speakers lecturing three times each on related subjects. They are:

Dr. Fred M. Smith, Iowa City: Diagnosis and Treatment of Coronary Artery Disease; Cardiac Therapy; Prognosis and Treatment of Rheumatic Heart Disease.

Dr. Hans Lissner, San Francisco: Indications for and Proper Use of Synthetic Male Hormone, Testosterone Propionate; Newer Synthetic Female Sex Hormone Preparations, Stilbestrol and Estradiol Dipropionate and Their Administration; Obesity and Leanness.

Dr. Donald V. Trueblood, Seattle: Lesions of the Lip, Oral Cavity and Jaw; Tumors of Soft Tissue Origin, Including the Neck; Tumors of the Breast.

Dr. Arthur Steindler, Iowa City: Foot Ailments; Low Back Pain; Disabilities About the Shoulder Joint.

A symposium on "Fluid Administration by Parenteral Methods" will be presented by four Portland physicians: Drs. Albert W. Holman, Louis P. Gambee, Homer P. Rush and Thomas D. Robertson. Other Oregon physicians to appear on the program include:

Dr. Blair Holcomb, Portland, Education of the Diabetic Patient.

Dr. Morton J. Goodman, Portland, Paroxysmal Flutter of the Diaphragm Simulating Coronary Thrombosis: Report of Unusual Case Controlled by Refrigeration of the Phrenic Nerve.

Dr. Charles P. Wilson, Portland, Disturbance of Function versus Functional Disturbance.

Drs. Charles D. Donahue and Ronald C. Romig, Eugene, Use of Avertin as a Basal Anesthesia in the Elderly Urologic Patient.

Dr. Martin A. Howard, Portland, Surgical Management of Gallbladder Disease.

The annual banquet will be Friday, September 6, and the golf tournament Saturday, September 7, at the Eugene Country Club.

PENNSYLVANIA

Society News.—Speakers at a meeting of the Lycoming County Medical Society, Williamsport, July 12, were Drs. Edward Lyon Jr. on "Etiology and Treatment of Hypertension"; Lloyd E. Wurster, "Simple Technic for Rapid Roentgen Pelvimetry," and Harold L. Tonkin, "Some Aspects of Coronary Disease."—Dr. Robert A. Matthews, Philadelphia, addressed the Cambria County Medical Society, Johnstown, July 11, on "Diagnosis and Management of Certain Psychiatric Problems Encountered in General Medical Practice."

High School Essays on Socialized Medicine.—The Schuylkill County Medical Society sponsored an essay contest on socialized medicine in the high schools of the county and awarded four prizes on the graduation days in June. The subjects were "Harmful Effects of Socialized Medicine to the Medical Profession" and "Harmful Effects of Socialized Medicine to the State and Nation." First and second prizes of \$15 and \$10 respectively were offered, and the best essays from each school were chosen by committees of teachers and physicians. The first prize essays were published by the leading county newspapers. Dr. Albanus S. Ryland, Pottsville, is chairman of the public relations committee of the society.

Philadelphia

Dr. Coates Becomes Professor Emeritus.—Dr. George M. Coates, professor of otolaryngology, University of Pennsylvania School of Medicine since 1933, has been made professor emeritus. He will continue as professor of otorhinology in the Graduate School of Medicine, a position he has held since 1917.

Personal.—Dr. Ralph Pemberton was recently elected an honorary fellow of the Royal Society of Medicine of England.

—Dr. Eleanor Scott, Philadelphia, received the current Mary Putnam Jacobi fellowship awarded by the Woman's Medical Association of the City of New York. She will continue her work in cancer research with Dr. Catharine MacFarlane at the Woman's Medical College of Pennsylvania. —Dr. Joseph Stokes Jr. went by clipper to France, August 4, to make a survey of the medical and public health needs of refugees in southern France under the auspices of the American Friends' Service Committee, it is reported.

Dr. and Mrs. Lewis Join Wistar Institute.—Dr. Warren H. Lewis, research associate in the department of embryology of the Carnegie Institution of Washington and professor of physiological anatomy at Johns Hopkins University School of Medicine, Baltimore, has retired from those positions and been appointed a member of the Wistar Institute of Anatomy and Biology as of July 1. Mrs. Lewis, also research associate at the Carnegie Institution laboratory, will carry on her work at Wistar Institute; it will be maintained by the Carnegie Institution as in the past years. The International Cancer Research Foundation is continuing to assist the investigations of Dr. and Mrs. Lewis.

SOUTH CAROLINA

Personal.—Dr. William H. Lacey, Blackville, has been appointed health officer of Georgetown County to succeed Dr. George S. T. Peebles, now with the state department of health. —Dr. Charles Fred Williams, superintendent of the South Carolina State Hospital, Columbia, received the honorary degree of doctor of laws at the June commencement of the University of South Carolina. —Dr. Yeadon M. Hyer, Chester, has been appointed health officer for Hampton and Allendale counties.

Society News.—Dr. Idys Mims Gage, New Orleans, addressed the Columbia Medical Society recently on "Surgery of Acute Cholecystitis" and Dr. George T. McCutchen, Columbia, "Some Advances in Plastic Surgery." —Drs. Isaac H. Grimbail and Thaddeus B. Reeves addressed the Greenville County Medical Society, Greenville, recently on medical and surgical treatment, respectively, of pyloric stenosis. —Dr. Wallace B. Bradford, Charlotte, N. C., addressed the Anderson County Medical Society, Anderson, July 10, on "Sterility in the Female." —Drs. William D. Hazlehurst and Douglas B. Rensen, Charleston, addressed the Medical Society of South Carolina, Charleston, June 25, on "Craniopharyngioma" and "Primary Subarachnoid Hemorrhage" respectively. A portrait of the late Dr. Edward F. Parker, Charleston, at one time president of the society, was presented at the meeting.

VIRGINIA

New Health Officers.—Dr. Earle C. Gates, Bristol, has been appointed health officer of a new unit in Chesterfield County. Dr. Robert Bruce Mallet, Baltimore, has been appointed health officer of Orange County, a new unit that opened July 1. Dr. William P. Terry, Victoria, has been appointed in Charlotte County and Dr. James M. Suter, Jonesville, in Washington County to succeed Dr. William M. Moir, Bristol, who goes to Smyth County.

Symposium on Industrial Health.—The Medical College of Virginia, Richmond, will present a two day symposium on industrial health at the college, September 12-13, under the sponsorship of the department of preventive medicine. Among the speakers will be:

Dr. Carl M. Peterson, secretary, Council on Industrial Health, American Medical Association, Chicago.

Dr. Robert A. Kehoe, Cincinnati, Industrial Lead Poisoning.

Dr. Anthony J. Lanza, New York, A Medical Setup for a Small Industrial Plant.

Dr. Victor G. Heiser, New York, Do Good Working Conditions Pay?

Dr. Bayard T. Horton, Rochester, Minn., Peripheral Vascular Disease in Industry.

Dr. George H. Gehrmann, Wilmington, Del., Objectives of Health Examinations and Their Industrial Applications.

Mr. L. B. F. Raymond, Philadelphia, An Industrialist Looks at Employee Health.

There will be a registration fee of \$5.

WEST VIRGINIA

State Medical Election.—Dr. Robert King Buford, Charleston, was elected president of the West Virginia State Medical Association at the annual meeting in White Sulphur Springs, July 29-31, held jointly with the Medical Society of Virginia. Dr. Buford will take office January 1. Vice presidents elected are Drs. Marvin H. Porterfield, Martinsburg, and Desausseur G. Preston, Lewisburg. The 1941 meeting will be in Charleston.

GENERAL

Special Society Meeting.—Dr. Isaac H. Jones, Los Angeles, was elected president of the Pacific Coast Oto-Ophthalmological Society at its annual meeting June 24-28 in Spokane. Vice presidents elected were Drs. Augustus B. Dykman, Portland, Ore., and Leroy R. Pugmire, Ogden, Utah; Dr. Clifford Allen Dickey, San Francisco, was reelected secretary. The guest speakers were Drs. French K. Hansel and Meyer Wiener, St. Louis, and Walter B. Lancaster, Boston.

Results of Board Examinations.—The American Board of Obstetrics and Gynecology at its examinations held in Atlantic City, N. J., in June granted certification to 191 of 242 candidates. The next examinations for group B, part I, candidates will be given Jan. 4, 1941, and for group A and group B, part II, at Cleveland in June 1941 immediately prior to the meeting of the American Medical Association. Applications may be obtained from Dr. Paul Titus, 1015 Highland Building, Pittsburgh (6), Pa.

Biological Photographic Association.—The tenth annual convention of the Biological Photographic Association will be held at the Hotel Schroeder, Milwaukee, September 12-14. The program will offer papers and discussions, with a salon of natural color and monochrome prints of biologic and clinical subjects. The association has offered its cooperation to the War Department in connection with a plan to organize clinical illustration units in the medical division in time of war. A questionnaire has been distributed and discussion of the plan will be in order at the meeting.

Railway Surgeons' Meeting.—Dr. George M. Williamson, Grand Forks, N. D., was elected president of the Great Northern Railway Surgeons' Association at the annual meeting in Spokane, Wash., June 28-29, and Dr. Roscoe C. Webb, Minneapolis, was reelected secretary. Among speakers at the meeting were Drs. Ernest D. Lamb, Klamath Falls, Ore., on "Fractures of the Phalanges"; Joseph W. Lynch, Spokane, "Diagnosis and Treatment of Intracranial Hemorrhages Complicating Head Injuries"; Henry W. Power, Conrad, Mont., "Treatment of Burns," and Donald G. Corbett, Spokane, "Traumatic Injuries to the Urinary Tract."

Tuberculosis Deaths Decline.—In 1939 there were 61,184 deaths from tuberculosis in the United States as compared with 63,677 in 1938, the *Bulletin* of the National Tuberculosis Association reports. The death rate dropped from 48.9 per hundred thousand of population in 1938 to 46.6 in 1939. Except for Delaware, the death rate in all states declined or remained within one decimal point higher than the 1938 figures. The lowest rates were in Nebraska (15.8), Utah (16.8), Iowa (18.5), Idaho (19.7) and North Dakota (20.2). The highest was in Arizona (191), but that was a decline from the 1938 rate of 221.6. The New Mexico rate remained the same, 91.2 for both years. The rate in the District of Columbia declined from 92.2 to 88.3.

Age Limit for Mine Workers Raised.—An order declaring employment in coal mines hazardous for minors between 16 and 18 years of age was issued, August 2, by Miss Katharine F. Lenroot, chief of the Children's Bureau of the U. S. Department of Labor. The order applies to both anthracite and bituminous mines whose products are shipped in interstate commerce. It declares that all occupations in underground mines and in the pits of coal stripping operations are hazardous. Some surface occupations are excepted, such as those in offices and repair or maintenance shops. In an investigation of the situation the Children's Bureau was assisted by an advisory committee representing coal operators, organized labor, safety experts, insurance interests and the public. The investigation showed that the accident risk in coal mining exceeds that in practically any other industry and that in underground work the risk is far greater than that of any other industry for which figures are available. Miss Lenroot pointed out that the employment of boys in coal mining has greatly decreased in the last decade and that employers realize the great hazards involved.

Bequests and Donations.—The following bequests and donations have been announced in recent months:

Cooper Hospital, Camden, N. J., \$320,000 from the Campbell Soup Company to build a wing as a memorial to Dr. John Thompson Dorrance, late president of the company.

Chester County Hospital, \$3,000, and Homeopathic Hospital, \$5,000 from the will of Mabel S. Matlack, West Chester, Pa. Both hospitals are in West Chester.

Montgomery County Hospital, Norristown, Pa., \$2,000 by the will of the late William Stephens, New Centerville.

Germantown Hospital, Philadelphia, \$2,000 by the will of Miss Harriet Huntley.

Episcopal Hospital, Philadelphia, \$15,000 to endow three beds, a bequest from Miss May F. Currie, a public school teacher.

Rochester (N. Y.) Academy of Medicine, \$1,000 by the will of the late Mrs. Jennie P. Roe, in memory of her husband, Dr. John O. Roe.

Shelton General Hospital, Shelton, Wash., \$25,000 as a gift from Mrs. Agnes H. Anderson, Seattle.

Children's Hospital of Boston, Boston Lying-In Hospital, Boston Association for the Relief and Control of Tuberculosis, Boston Floating Hospital, New England Peabody Home for Crippled Children, \$5,000 each by the will of William A. McKenney, Brookline, Mass.

Jewish Hospital Association, Philadelphia, \$2,500 by the will of Charles Walker, to be used for care of ward patients.

Philadelphia Home for Incurables, \$25,800, and the University of Pennsylvania Hospital, \$13,287 from the estate of Miss Emma C. Gratz, who left the fund in trust at her death in 1921.

Pennsylvania Hospital, Philadelphia, and Massachusetts General Hospital, Boston, will share one third of an estate of \$3,500,000 left by the Rev. Alexander G. Mercer, who died in 1882. The estate was left in trust and the last beneficiary died in 1938.

FOREIGN

Yellow Fever on Ship from South America.—Five cases of yellow fever among the crew of a British ship that arrived in Londonderry, Ireland, were reported in a cable to the *New York Times*, August 9. It was said that the disease was discovered after the ship had touched at Freetown, West Africa. One of the patients died. It was suspected that two pet monkeys carried the disease aboard. One monkey died and the other was destroyed.

CORRECTION

Meeting of Southeastern Surgeons in Miami.—The Florida section of the Southeastern Surgical Congress will hold its seventh annual clinical conference, August 31, at the James M. Jackson Memorial Hospital in Miami and not at the Jackson Memorial Hospital, Dade City, as noted in *THE JOURNAL*, August 10, page 467.

Government Services

Changes in Public Health Service

The following changes in assignments have been announced by the U. S. Public Health Service, among others: Medical Director George W. McCoy, relieved at New Orleans and ordered to the National Institute of Health, Washington, D. C.; Medical Director Eugene H. Mullan, relieved at Ellis Island and ordered to Montreal, Canada, for duty, and Surgeons Albert E. Russell and Edgar W. Norris Jr., relieved at Chicago and Hot Springs, Ark., and ordered to district number 1, New York, and Baltimore for duty, respectively; Surgeon Winfield K. Sharp Jr., relieved at New Orleans and ordered to Washington, D. C., for duty.

Physicians Wanted for CCC Duty

The Surgeon of the Seventh Corps Area announces that physicians are needed for the medical service of the Civilian Conservation Corps. The initial salary is \$3,200 a year. No quarters are provided for families, and the physicians are required to pay for their own food at camps. Temporary quarters for physicians are provided at the camps for a nominal fee. Those selected must pay their travel expenses to the headquarters of the district, where they are placed on temporary duty before being sent to camp. The principal duties at camps consist of the medical care of the enrollees and the practice of preventive medicine. To be eligible, the physician must be a citizen of the United States, a graduate of an accredited medical school, licensed to practice medicine and physically able to perform the duties. Physicians over 60 years of age are not ordinarily employed. Those interested are requested to submit applications to the Office of the Surgeon, Headquarters, Seventh Corps Area, Federal Building, Omaha, giving date on which available and preference of assignment in the following states: Minnesota, North Dakota, South Dakota, Iowa, Nebraska, Missouri, Kansas and Arkansas.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 24, 1940.

Protection of the Soldier in Warfare

At the Section of Surgery of the Royal Society of Medicine, a discussion took place on what the chairman, Mr. Zachary Cope, called "the physical prophylaxis of wounds." Mr. Kenneth Walker (*THE JOURNAL*, May 18, p. 2043), said that in the last war he noted how many men were killed by small missiles entering the chest and ripping up one of the great vessels or the heart. The principle that it was worth while protecting the head by means of a steel helmet had been recognized. The old objection to armor—that it would overload the soldier—no longer held. The man to be protected did not march but was carried by lorry, motorcycle or airplane. Moreover, steel of great tensile power was now available, as well as other suitable materials. Armor to protect against armor-piercing bullets necessitated a weight of 20 pounds, but 60 per cent of the wounded arriving at casualty clearing stations were injured by other missiles, mostly by trench-mortar splinters. Mr. Walker showed specimens of compressed fiber, including bakelite, which had the same tensile power as aluminum but half its weight. It would protect against shrapnel. During the Hitler régime three unsuccessful attempts had been made to induce a certain American inventor of armor to equip the German armies.

Sir Richard Cruise (ophthalmologist) described his duralumin visor. He hoped that no steel helmets would be issued in future without this attachment. From figures which he worked out in 1917 he found that from 50 to 70 per cent of war blindness was preventable.

Sir Harold Gillies (plastic surgeon) said that the War Office should consider the question of extra wind screens which would protect the driver. Frequent in war were burns of the hand caused by placing it in front of the face when exposed to flame. The result was extensive burns of the back of the hand, producing stiff joints. A gauntlet would give protection without interfering with the use of the hand in driving.

Mr. Ogier Ward referred to many casualties from missiles directed from above. The natural reaction was to crouch, and therefore there had been many wounds of the buttock and back. The British helmet, which he thought inferior to the German, afforded no protection to the temple and no protection behind. He suggested a curtain of chain mail attached to the back of the helmet and coming down to the seventh cervical vertebra.

Mr. E. D. D. Davis (laryngologist) said that the British helmet was as good as the German, which was 14 ounces heavier. In the last war Harvey Cushing published a number of photographs showing extensive injury to the helmet, yet the wearer sustained only scalp wounds. The German helmet was more easily seen and its contour was such that it was less efficient in warding off missiles.

Some speakers objected that the weight carried by the soldier must not be increased. Mr. T. B. Layton was absolutely opposed to the addition of any weight to the British soldier's equipment, but he had been impressed by the protection afforded by something in the pocket covering a vital area and weighing about 2 ounces.

Mr. Kenneth Walker in reply quoted a war correspondent to the effect that the Germans were using body armor. It would be possible to produce something weighing 2 ounces to cover the heart and give more protection than a book or flask carried in the breast pocket.

RESOLUTIONS OF THE SOCIETY

The following resolutions were unanimously adopted:

"That this representative meeting of the Royal Society of Medicine, after full discussion of the question, is emphatically

of the opinion that the physical protection of the members of the fighting forces can and should be improved by a closer collaboration between the medical profession and the appropriate technical experts of the Admiralty, War Office and Air Ministry.

"That this meeting of the Royal Society of Medicine resolves that the Council be asked to consider the formation of a special committee to this end. As the matter is one of extreme urgency and importance, it is hoped that the president may use his emergency powers and approach the government with the offer of the society's cooperation at the earliest possible date."

The Workmen's Compensation Acts: Foot Drop as an "Accident"

The workmen's compensation acts entitle a man to compensation for incapacity due to an accident "arising in or out of his employment." The word accident was never defined, but by a series of judgments in the courts has been given the widest possible scope so as to cover anything which in any way can be connected with employment. This wide interpretation has again and again been contested but without success. Each judgment in favor of the workman has furnished a precedent for further extension. Thus a workman collapsed and died while turning a nut with a spanner. There was no evidence of undue strain, and the necropsy showed a ruptured large aneurysm of the aorta in an advanced stage. Medical evidence was given that the rupture might have easily occurred in his sleep. But the court held that it was an "accident" within the meaning of the act. Cases of sunstroke and lightning stroke while at work have been held to be "accidents." An employer is liable for injury even when a workman acts in direct violation of his orders. A man who was receiving compensation was sent to prison for theft. Though this of course prevented him from earning any wages, the judge held that he was entitled to the continuance of the weekly compensation payments. The result of the compensation acts has become a huge burden on industry, amounting to about \$60,000,000 annually paid in respect to about 500,000 "accidents." The latest case contested in the courts, with the usual result, was the following:

A man employed in building pillars to support the roof of underground workings in a coal mine suffered from foot drop as the result of pressure on the peroneal nerve in the crouching position in which he had to work. The arbitrator of the claim for compensation held that the incapacity was not the result of an accident arising out of or in the course of his employment. This decision was reversed by a higher court. The employers appealed against this judgment and the case was taken to the highest court, the House of Lords, which decided in favor of the workman. Giving judgment, the lord chancellor said that it was admitted that the man's incapacity had arisen out of his employment and the only question was whether it was due to accident. The phrase "injury by accident" as used in successive workmen's compensation acts had been the subject of repeated and elaborate discussion and in the course of forty years a gradual but steady extension of its meaning could be traced. The early cases seemed to have been decided on the basis that "accident" was some fortuitous and unexpected event, as in policies of insurance. In the first case which came to the House of Lords a decision was given in favor of a workman who ruptured himself in an act of overexertion. It was held that "accident" was not a legal term with clearly defined meaning but meant any unintended and unexpected occurrence. This decision opened the door to claims which had previously failed. It was next decided that a man who contracted anthrax in wool sorting had suffered "an accident." But two cases of "beat hand" and one of "beat knee" were decided in favor of the employer on the ground that the injury was the inevitable result of long continued work. Thus a claim in respect to a progressive

disease failed. But later a man suffering from chronic heart and kidney disease one day had to stop owing to sudden pain and choking. The judge held that his hard work induced breakdown of his enfeebled heart. This involved a definite change in his condition on the day in question and therefore his claim succeeded. In the present case the lord chancellor said that it was impossible to distinguish it in principle from a case of foot drop. The pressure on the peroneal nerve during the last spell of work produced the paralysis. The man sustained a definite physiologic injury in his work. The fact that for a month previously he had felt some loss of power in no way affected his right to compensation.

Red Cross Funds

The British Red Cross has raised \$9,000,000. On behalf of the American Red Cross Mr. Joseph Kennedy, the Ambassador, has broadcast an appeal to Americans in which he said that everything indicated that England would be called on to meet the greatest siege in history. To relieve the suffering a committee of the American Red Cross had been set up in this country, of which Mr. Daniel Grant had agreed to be chairman and he himself honorary chairman. Already the American Red Cross had made expenditure in Britain amounting to \$500,000 and a further \$5,000,000 had been collected. Bombs had fallen on the English countryside and villages, and the fervent gratitude of Americans was that their children were not liable to be killed in their beds at any time.

BUENOS AIRES

(From Our Regular Correspondent)

July 19, 1940.

Control of Blindness

A decree has been issued by the president of Argentina creating a national foundation of the blind with authority to supervise all public and private state subsidized institutions for the protection and education of the blind. It is to recommend administrative and legal measures for the care of the blind and to handle endowments intended to combat blindness.

The connection between gonorrheal conjunctivitis and the use of Credé's method, the infiltration of silver nitrate in the conjunctival sac of the newborn, in South America was discussed by A. Vázquez Barriera in the *Revista oto-neuro-oftalmológica y de cirugía neurológica sud-americana* (14:79 [Nov.] 1939). According to his figures blindness, as ascertained in the national institute for the blind, was found to have been caused in 114 cases (35.6 per cent) by conjunctivitis of the newborn. This percentage is much greater in Brazil (48 per cent). In São Paulo it amounted to 40 per cent. In Colombia among forty inmates of the Colombian institute for the blind it amounted to 25 per cent. In the state institute for the blind in Uruguay the percentages ranged from 42 in 1917 to 39 in 1926 and to 36.5 in 1938. In Argentina, where every province has sovereign power, Credé's method is compulsory in only three, in Brazil in only nine federal states. Some of the federal states in Brazil, however, require that cases be reported. No appropriate legislation exists either in Colombia or in Peru, though the clinics and maternity hospitals usually employ the method. In Lima, for example, though gonorrhea was discovered in 41 per cent of the mothers, only one or two cases were found in about 7,000 babies. Suppurating conjunctivitis must be reported in Peru. In Uruguay Credé's method has been compulsory since 1924. The national committee for the prophylaxis of blindness distributes dropping bottles containing the solution to all midwives free of charge. In Uruguay, Paraguay and Venezuela cases must be reported by the physician. However, the use of Credé's method is not compulsory either in Paraguay or in Venezuela.

Hookworm Disease

Ancylostomiasis plays an important part in the disease control program of Argentina. In 1924 a law made treatment for hookworm obligatory throughout the country. Infested regions were specified and the control carried out jointly by the authorities involved. Persons infested with worms must prove that they are under treatment. If they cannot furnish proof they are consigned to one of the institutes and treated without charge. If persons refuse to be treated they may be isolated in their homes. Homes, factories and schools in infested regions must be equipped with the required sanitary arrangements. Transfer of ownership of houses may not be completed notarially until the local sanitary boards have accepted the sanitary arrangements. The law of 1924 was supplemented by regulations containing enforcement provisions. In these the northeastern provinces and territories regarded as hookworm infested were designated. These regulations have not yet gone into effect.

The first case of hookworm in Argentina was reported in 1885. The patient was an Italian aged 26 who had previously worked as a laborer in the construction of the St. Gotthard tunnel in Switzerland. In parts of the Argentine province of Santa Fe 70 per cent of 633 persons examined in 1938 were found to be infested (Huarque Falcon, J.: *Scm. Méd.* 47:1135 [May 9] 1940). A recent monograph by Dr. Reynaldo Agrelo, an assistant in the department of social medicine and hygiene in the faculty of medicine of Buenos Aires, considers hookworm disease together with malaria as the most serious threat to the inhabitants of the interior provinces. According to this monograph, only from 15 to 20 per cent of the young men in the province of Corrientes were fit for military service because of ancylostomiasis. Undernourishment due to the great poverty found among the inhabitants of these regions was a secondary cause. Dissemination of the disease is helped by the general custom prevalent there of walking barefooted. What is needed is money and the authorization of the government agencies to establish an increased prophylaxis.

Incidence of Leprosy

The *Boletín de la Oficina sanitaria panamericana* (19:508 [May] 1940) discusses the prevalence of leprosy in the world. Twenty-five years ago, when the Far East was regarded as the chief source of the disease, Victor Heiser estimated the total number of lepers at 2,000,000. The spread of leprosy in Africa was not known at the time. Sir Leonard Rogers estimated the total number of lepers at 3,000,000, with this distribution: China 1,000,000, India 1,000,000, Africa about 500,000, Russia 150,000, Latin America 60,000, Siam 15,000, the Philippine Islands 12,000, Europe 7,000, Australia about 5,000, United States and Canada about 100 and the remaining countries about 35,000. Muir computed a still higher incidence, assuming from two to three early cases for each advanced case. Today it is believed that there are from five to ten million leprosy persons, 5,400 for every million of the world's inhabitants. In the Western Hemisphere the situation warrants serious consideration but is not alarming. According to recent statistics there are fewer than 100,000 lepers in North and South America, from 35,000 to 50,000 being in Brazil, 12,000 in Colombia, from 8,000 to 10,000 in Argentina, from 4,000 to 6,000 in Mexico, from 2,000 to 5,000 in Paraguay, from 2,000 to 4,000 in Cuba, about 2,000 in the French colonies, from 1,000 to 2,000 in Venezuela, more than 1,500 in Dutch Guiana, about the same number in British Guiana, about 1,200 in the United States, 1,000 in Trinidad, from 500 to 1,000 in Uruguay, several hundred in Chile and Peru, about 200 each in Ecuador and Barbados, Haiti, Jamaica, Bolivia, Costa Rica, Dominican Republic, Guatemala, Honduras, Nicaragua, Salvador and the Virgin Islands, from 150 to 200 in Puerto Rico, more than 100 in Panama and fewer than 100 in Canada. The South Pacific regions are least

affected. Continental Chile is considered free from the disease. However, Easter Island, belonging to Chile, is practically a leper colony in which hundreds of leprosy persons enjoy unrestricted liberty.

Society News

The newly organized Argentine Society of Medical Psychology and Psychoanalysis, an affiliate of the Argentine Medical Association, held its first meeting July 5. Prof. Juan Ramón Beltrán, professor of the history of medicine and president of the new society, pointed out in his opening address the lack of philosophical and humanistic training in the education of present day medical students. Purely technical and scientific studies make for a one-sided product. The training of medical students in psychology in Argentina, he said, was too elementary. Psychology needed to be studied in its application to medicine. Prof. Gonzalo Bosch delivered a lecture on the significance of psychology and psychoanalysis in present day medicine.

The newly founded Latin-American Society of Plastic Surgery (Sociedad Latinoamericana de Cirugía Plástica) met for the first time in São Paulo, Brazil, July 4 and 5. Brazil, Argentina, Uruguay, Chile and Peru were especially well represented. Numerous papers were read and demonstrations made.

PHILIPPINE ISLANDS

(From a Special Correspondent)

July 1, 1940.

Psychiatry in the Philippines

At the inaugural meeting of the Philippine Society of Psychiatry and Neurology March 2, held at the Scientific Hall of the National Psychopathic Hospital, Mandaluyong, Rizal, the consulting psychiatrist and neurologist of the bureau of health, Dr. Maximilian Silbermann, stressed the importance of the Philippines as a comparatively new field for research work in medical psychology. Dr. Silbermann had studied and worked with Dr. Otto Potzl and Dr. Wagner von Juaregg of Vienna before coming to the Philippines. He pointed out that, as a tropical country, the Philippines offers unique opportunities to the research worker to study the influence of the climate on the development and causes of nervous and mental diseases and to investigate special types found here. "The fact that practically all textbooks on tropical diseases devote only very brief chapters to nervous diseases or make no mention of them at all shows how little scientific work has been done in this direction," Dr. Silbermann said. Dr. Demetrio Lacuna, chief of the National Psychopathic Hospital, traced the progress of the work in the care and treatment of psychotic patients in the Philippines. As early as 1782, an asylum for the insane was founded by Señor Francisco Gomez. But the real beginning of modern psychiatric work in the Philippines was in 1918, thanks to the pioneering efforts of Dr. Elías Domingo. In 1928 the National Psychopathic Hospital was founded and placed under the supervision of the bureau of health.

The hospital plant occupies 60 hectares of land, 9 kilometers from the center of Manila. There are one administration building, five concrete pavilions for the inmates of the institution, two big dormitories for the male and female nurses and attendants, a separate mess hall and kitchen, five cottages for physicians plus six now under construction, a new and separate building for the laboratory and the pharmacy, a storeroom, a garage, one basketball court and three tennis courts. A plan is afoot to erect a separate building to become the clinic for nervous diseases with a bed capacity of 300. It will serve both as a receiving unit and a hospital for acute cases amenable to treatment and for diagnostic and intensive research work. It will also be a training center for staff physicians, nurses, university students and attendants, besides being an information center on medical psychology for the entire country.

Marriages

HARRY H. HENDERSON, Wheeling, W. Va., to Miss Regina Barbara Vaschak of Youngstown, Ohio, in Washington, D. C., June 15.

WILLIAM HUGH PATTON JR., Morganton, N. C., to Miss Ruth Briscoe of Winona, Miss., in Clarksdale, Miss., July 8.

ARTHUR MORTON SMITH JR., Charlottesville, Va., to Miss Elizabeth Wood Borst of White Plains, June 22.

KATHERINE M. CLOSE to Rev. Herbert B. Smith, both of Los Angeles, at St. Helena, Calif., July 15.

JOSEPH P. HOLT, Versailles, Ky., to Miss M. Elizabeth Walter of Anna, Ill., in Champaign, Ill., June 7.

GEORGE ALFRED MITCHELL, Clinton, Mo., to Miss Ann Katherine Ulmer of St. Louis, June 30.

JULIEN HERMAN MEYER, Enfield, N. C., to Miss Dorothy Rose Kahn of Richmond, Va., July 14.

MAX KRAKAUER, Davenport, Iowa, to Miss Mary Alice Dawson of Portsmouth, Ohio, June 7.

JAMES FENDALL PARKINSON JR., Chester, Va., to Miss Sarah Frances Williams of Scottville, July 3.

CLIFFORD MATHEW SCHMIDT, Newton, N. J., to Miss Eleanor Elizabeth Meyer of Andover, July 13.

EMERSON R. HATCHER, Berea, Ky., to Miss Jane Louise Springer of Columbus, Ohio, July 24.

ARTHUR LAMLEY LENNOX, Adrian, Mich., to Miss Elizabeth Karns of Chambersburg, Pa., July 8.

GORDON HARVEY SPRAGUE to Miss Margaret Scott, both of Cincinnati, at Liberty, Ind., June 27.

HENRY SALTONSTALL, Milton, Mass., to Miss Cecilia Beaux Drinker of Merion, Pa., July 27.

EARLE B. KAY, Ann Arbor, Mich., to DR. DOROTHY MAE IRIE of Grand Rapids, June 18.

WILLIAM BENJAMIN HOOVER to Miss Sallie Frances Perdue, both of Richmond, Va., June 22.

HARVEY ERNEST JORDAN JR., University, Va., to Miss Janet Robinson of Hampton, July 13.

ROBERT HARDIE ENGLEBOW, Anahuac, Texas, to Miss Sara Thurman of Commerce, June 8.

GEORGE CALVIN BRYANT JR. to Miss Novella Bernice Dodson, both of Dallas, Texas, May 20.

RALPH T. RANK, Milwaukee, to Miss Marie J. Foeller of Green Bay, Wis., June 17.

JOSEPH W. STECKBAUER to Miss Frances Zendala, both of Manitowoc, Wis., May 25.

AUGUSTUS B. KUHLMAN JR. to Miss Sara Ellen Marti, both of Davenport, Iowa, May 25.

GEORGE D. REAY, Onalaska, Wis., to Miss Frances Robb Wise of Hayward, June 8.

MITCHELL L. MORAN to Miss Irene Batchelder, both of St. Petersburg, Fla., June 12.

SVERRE QUISLING, Madison, Wis., to Miss Virginia Constance Moe of Goodman, June 8.

RICHARD L. MEILING to Miss Ann Elizabeth Lucas, both of Columbus, Ohio, in June.

WILTON E. TUGWELL to Miss Virginia Noel Johnson, both of Pensacola, Fla., May 10.

NATHAN B. LEWIS to Miss Olga Douglas, both of Vicksburg, Miss., June 28.

HERBERT BRYAN HUTT to Miss Nancy Evans, both of Youngstown, Ohio, June 29.

LEONARD S. MARKSON, Milwaukee, to Miss Edith Sherin of New York, June 14.

ANTHONY J. SANFELIPPO to Miss Lorraine Connelly, both of Milwaukee, June 22.

JOSEPH H. FRIES to Miss Marilyn Ronda Wetstone, both of Brooklyn, June 16.

JAMES JENNINGS GAUNT to Miss Alice Mary Bruce, both of Milwaukee, July 6.

LOYD B. GREENE to Miss Rosalind Lamb, both of Philadelphia, May 25.

FRANK E. WENZKE, Dayton, Ohio, to Miss Rita Norman in Xenia, June 22.

CONDE F. CONROY to Miss Margaret Murphy, both of Milwaukee, June 8.

Deaths

Stuart Pritchard * Battle Creek, Mich.; University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1905; member of the American Association for Thoracic Surgery and the American Clinical and Climatological Association; fellow of the American College of Physicians; past president and vice president of the National Tuberculosis Association and a member of the board of directors from 1928 to 1936; in 1936 founder of the Michigan Trudeau Society; in charge of the chest department of the Battle Creek Sanitarium from 1913 to 1930; since 1930 president and general director of the W. K. Kellogg Foundation; in 1928 delegate from the United States to the conference of the International Union Against Tuberculosis in Rome; in 1940 received the honorary degree of doctor of science from the University of Michigan, Ann Arbor; aged 58; died, August 4, of carcinoma of the thyroid.

Lisle Byron Kingery * New York; Cornell University Medical College, New York, 1918; member of the American Urological Association; fellow of the American College of Surgeons; served during the World War; attending urologist to the New York Hospital, New York, St. Agnes Hospital and New York Hospital, Westchester Division, White Plains, Grasslands Hospital, Valhalla; consulting urologist, Booth Memorial Hospital, New York, Northern Westchester Hospital, Mount Kisco, and the United Hospital, Port Chester; aged 46; died, July 11, in the Flushing (N. Y.) Hospital of coronary thrombosis.

De Witt Clinton Bryant * Claremont, Calif.; University of Wooster Medical Department, Cleveland, 1875; fellow of the American College of Surgeons; past president of the Nebraska State Medical Association and the Omaha-Douglas County Medical Society; formerly dean and professor of ophthalmology at the John A. Creighton Medical College, Omaha; at one time on the staffs of St. Joseph, Mercy and Swedish hospitals in Omaha; formerly mayor of Claremont; aged 91; died, June 30, in the Pomona Valley Community Hospital, Pomona, of hemorrhage from the pharynx.

John G. Wishard * Wooster, Ohio; Medical College of Indiana, Indianapolis, 1888; past president of the Wayne County Medical Society; founded the American Hospital in Teheran, Persia, and was its director for twenty years; past president of the Ohio State Student Health Association; for many years one of the five members of the Persian National Board of Health; author of "Twenty Years in Persia," and "Reminiscences of a Doctor"; aged 76; died, July 15, of coronary thrombosis.

Philip Du Bois Bunting, Elizabeth, N. J.; Yale University School of Medicine, New Haven, Conn., 1898; member of the Medical Society of New Jersey; past president of the Union County Medical Society; served during the World War; for many years member of the board of health; aged 62; on the staffs of Bonnie Burn Sanatorium, Scotch Plain, and the Rahway (N. J.) Hospital; served on the staff of the Elizabeth General Hospital, where he died, June 28, of tumor of the brain.

Christian Herman Diehl * Wood River, Ill.; St. Louis College of Physicians and Surgeons, 1908; for many years district health superintendent for the Illinois State Department of Public Health, and health officer of Roxana; formerly managing officer of the Lincoln (Ill.) State School and Colony; on the associate staff of the Alton (Ill.) Memorial Hospital; aged 60; died, July 17, in St. Joseph's Hospital, Alton, of hypertensive heart disease.

Alexander Joseph Douglas, Winnipeg, Man., Canada; Manitoba Medical College, Winnipeg, 1897; at one time professor of preventive medicine, hygiene and public health at his alma mater; past president of the Canadian Public Health Association; for many years medical health officer of Winnipeg; aged 66; died, June 30, in the Winnipeg General Hospital of a fractured rib and rupture of the liver and spleen.

William Graham Hinsdale, Syracuse, N. Y.; Medical Department of Tulane University of Louisiana, New Orleans, 1886; member of the Medical Society of the State of New York; formerly associate professor of obstetrics at the Syracuse University College of Medicine; aged 78; on the staff of the Crouse-Irving Hospital, where he died, July 15, of pernicious anemia.

Ray Glenn De Voist, Cincinnati; University of Michigan Homeopathic Medical School, Ann Arbor, 1914; at one time professor of hygiene and sanitation and of histology and embry-

ology at the Eclectic Medical College; superintendent of the Cincinnati Anti-Tuberculosis League; aged 52; died, July 12, in the Bethesda Hospital of carbuncle of the neck and diabetes mellitus.

Adelaide Brown * San Francisco; Cooper Medical College, San Francisco, 1892; an Affiliate Fellow of the American Medical Association; member of the state board of health from 1915 to 1931; lecturer on child hygiene, Stanford University School of Medicine from 1920 to 1936; obstetrician to the Children's Hospital from 1899 to 1915; aged 72; died, July 29.

John *Snell Holbrook * Mankato, Minn.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1896; fellow of the American College of Surgeons; at one time member of the school board; past president of the Blue Earth County Medical Society; on the staffs of St. Joseph's and Immanuel hospitals; aged 66; died, June 8, of coronary thrombosis.

Albert Sparr Rider * Flandreau, S. D.; Rush Medical College, Chicago, 1900; past president of the South Dakota State Medical Association; fellow of the American College of Surgeons; veteran of the Spanish-American and World wars; medical director of the Flandreau Indian School Hospital; aged 63; died, July 8, of coronary occlusion.

Robert Dixon Gibson, Youngstown, Ohio; Western Reserve University Medical Department, Cleveland, 1880; fellow of the American College of Surgeons; past president of the Mahoning County Medical Society; for many years on the staff of the Youngstown Hospital; aged 84; died, July 18, of carcinoma of the rectum with pulmonary metastases.

John Thompson Altman, Jonesboro, Ark.; Vanderbilt University School of Medicine, Nashville, Tenn., 1908; member of the Arkansas Medical Society; fellow of the American College of Surgeons; past president of the Craighead-Poinsett County Medical Society; on the staff of St. Bernard's Hospital; aged 57; died, July 17, of heart disease.

Frederick Tanquary Hyde, Lake Crescent, Wash.; Harvard Medical School, Boston, 1898; member of the Washington State Medical Association and the Pacific Coast Oto-Ophthalmological Society; at one time connected with the U. S. Public Health Service; served during the World War; aged 68; died, June 2, in a hospital at Seattle.

Carl Frederick Reppun, Honolulu, Hawaii; Ludwig-Maximilians-Universität Medizinische Fakultät, München, Bavaria, 1910; University of Moscow Faculty of Medicine, Russia, 1912; member of the Hawaii Territorial Medical Association; aged 57; died, June 7, in the Queen's Hospital of injuries received in an automobile accident.

Robert Bruce Gamble, Meadville, Pa.; University of Buffalo School of Medicine, 1896; member of the Medical Society of the State of Pennsylvania; veteran of the Spanish-American and World wars; fellow of the American College of Surgeons; on the staff of the Meadville City Hospital; aged 69; died, July 11.

George Andrews Holdridge, Foley, Minn.; University of Bellevue Hospital Medical College, New York, 1901; member of the Minnesota State Medical Association; member of the county board of commissioners; aged 61; died, July 3, in St. Cloud of injuries received in an automobile accident.

Anthony G. Wittman, Elgin, Ill.; Northwestern University Medical School, Chicago, 1905; member of the Illinois State Medical Society; veteran of the Spanish-American War; assistant managing officer of the Elgin State Hospital; aged 64; died, July 16, of bronchogenic carcinoma.

Edward Andrew Rowland, New York; University of Alabama School of Medicine, 1910; member of the American Psychiatric Association; on the staff of the Manhattan State Hospital, Ward's Island; aged 57; died, July 10, in the Neurological Hospital of brain tumor.

Robert C. Eve, Atlanta, Ga.; College of Physicians and Surgeons, Baltimore, 1892; veteran of the Spanish-American and World wars; formerly affiliated with the Veterans Administration Facility; aged 71; died, June 22, of carcinoma of the lung and myocarditis.

Willis Franklin Hart * Camden, Maine; Medical School of Maine, Portland, 1886; in 1918 member of the House of Delegates of the American Medical Association; on the staff of the Knox County General Hospital, Rockland; aged 80; died, June 25.

Daniel Howard Hope * Cape Girardeau, Mo.; Washington University School of Medicine, St. Louis, 1904; on the staffs of the Southeast Missouri Hospital and St. Francis Hospital; aged 61; died, July 4, in St. Luke's Hospital, Denver.

Taylor Wilson Funkhouser ☉ Danville, Ill.; Rush Medical College, Chicago, 1916; served during the World War; aged 50; on the staffs of St. Elizabeth Hospital and the Lakeview Hospital, where he died, July 18, of carcinoma.

Robert Earl Evans, Milledgeville, Ga.; Kentucky University Medical Department, Louisville, 1906; member of the Medical Association of Georgia; on the staff of the Scott Hospital; aged 58; died, July 8, of angina pectoris.

John Lee Calcote Jr., Hamburg, Miss.; Hospital College of Medicine, Louisville, Ky., 1906; member of the Mississippi State Medical Association; president of the county board of supervisors; aged 57; died, June 20, of brain tumor.

Wilber Price Armstrong Sr., Springfield, Ill.; Homeopathic Hospital College, Cleveland, 1884; member of the Illinois State Medical Society; aged 79; died, July 7, of pulmonary edema, diabetes mellitus and arteriosclerosis.

Joseph Adrian Stefanski, Chicago; Hering Medical College, Chicago, 1909; member of the Illinois State Medical Society; on the staff of the South Chicago Community Hospital; aged 55; died, July 3, of pneumonia.

Titus Samuel Lapp ☉ Waynesville, Ill.; Northwestern University Medical School, Chicago, 1931; aged 39; died, July 11, in the Deaconess Hospital, Lincoln, of a gunshot wound received when he was cleaning his gun.

Philip H. Feigen, Chicago; Chicago College of Medicine and Surgery, 1907; aged 67; on the staffs of St. Mary of Nazareth Hospital and the Michael Reese Hospital, where he died, July 25, of coronary thrombosis.

Charles J. Jamieson, Winnipeg, Man., Canada; McGill University Faculty of Medicine, Montreal, Que., 1879; aged 86; died, June 27, in the Winnipeg General Hospital of diabetes mellitus and arteriosclerosis.

Isaac Ernest Van Hoesen ☉ Coxsackie, N. Y.; Albany (N. Y.) Medical College, 1903; formerly health officer and county coroner; aged 58; died, July 10, of bronchogenic carcinoma of the left lung.

Boudinot Stimson, New York; Columbia University College of Physicians and Surgeons, New York, 1938; aged 43; resident physician at St. Luke's Hospital, where he died, June 28, of intestinal obstruction.

Frank W. Brey, Wabasso, Minn.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1910; member of the Minnesota State Medical Association; aged 54; died, June 8, of brain tumor.

Hiram Delaney Burns, Albert Lea, Minn.; University of Nebraska College of Medicine, Omaha, 1914; member of the Minnesota State Medical Association; aged 51; died, June 19, of coronary occlusion.

Ralph Ernest Dawson, Blanchard, Mich.; Detroit College of Medicine, 1906; member of the Michigan State Medical Society; served during the World War; aged 58; was found dead in bed, June 27.

Floyd James Malloy, Anaconda, Mont.; Creighton University School of Medicine, Omaha, 1928; member of the Medical Association of Montana; aged 37; died, July 8, of coronary embolism.

Thomas E. P. Chambers, Cleveland, Tenn.; Chattanooga Medical College, 1896; veteran of the Spanish-American and World wars; county physician; aged 67; died, July 18, of coronary thrombosis.

Robert T. Grime, Philadelphia; Jefferson Medical College of Philadelphia, 1892; member of the Medical Society of the State of Pennsylvania; aged 80; died, July 5, in the Presbyterian Hospital.

Malcolm Dean Miller, Akron, Ohio; Harvard Medical School, Boston, 1905; formerly head of the contagious disease division of the city health department; aged 61; was shot and killed, July 5.

Philip C. Giltner, Maunie, Ill.; University of Louisville (Ky.) Medical Department, 1889; member of the Illinois State Medical Society; aged 73; died, June 27, of a self-inflicted bullet wound.

Francis Joseph Delaney, Port Townsend, Wash.; John A. Creighton Medical College, Omaha, 1905; served during the World War; city and county health officer; aged 61; died, June 10.

Joseph Danly Budd, Kansas City, Mo.; St. Paul Medical College, 1887; at one time member of the state legislature of Minnesota; Civil War veteran; aged 92; died, July 21, of mitral stenosis.

Augustus Ralf Reder ☉ Aurora, Ill.; Washington University School of Medicine, St. Louis, 1894; aged 68; died, July 9, in Hot Springs National Park, Ark., of carcinoma of the liver.

Joseph T. Berry, Cincinnati; Eclectic Medical Institute, Cincinnati, 1883; aged 78; died, July 18, in the Bethesda Hospital of acute cardiac dilatation and carcinoma of the sigmoid.

Ferdinand P. Fisch ☉ Portland, Ore.; University of Oregon Medical School, Portland, 1906; aged 64; died, June 30, of ruptured diverticulum with peritonitis and bronchopneumonia.

Frederick Philip Lowenstein, Springfield, Mass.; University of the City of New York Medical Department, 1895; aged 65; died, July 13, of heart disease and arteriosclerosis.

John Bruyere, Trenton, N. J.; Jefferson Medical College of Philadelphia, 1884; member of the Medical Society of New Jersey; aged 81; died, June 24, of cerebral hemorrhage.

Rolla D. Pope, Long Beach, Calif.; Columbian University Medical Department, Washington, D. C., 1897; aged 70; died, June 26, of coronary occlusion and chronic myocarditis.

Vratislas J. Plhak, Detroit; Detroit College of Medicine and Surgery, 1915; aged 49; died, July 16, in the Harper Hospital of portal cirrhosis and cardiac decompensation.

Norborne Page Cocke ☉ Charlottesville, Va.; University of Virginia Department of Medicine, Charlottesville, 1900; aged 62; died, June 29, of coronary thrombosis.

Alexander L. Martin Sr., Richmond, Va.; Medical College of Virginia, Richmond, 1895; aged 71; died, June 24, of uremia, chronic nephritis and arteriosclerosis.

John Chason, Chatom, Ala.; Louisville (Ky.) Medical College, 1905; at one time health officer of Baldwin County; aged 64; died, June 26, of biliary cirrhosis.

George Upton Bennett, Cleveland; Western Reserve University Medical Department, Cleveland, 1889; aged 81; died, July 8, of prostatic abscess and uremia.

Carl William Ulfert, Wheeling, W. Va.; College of Physicians and Surgeons, Baltimore, 1904; for many years county jail physician; aged 58; died, June 30.

George William Bock, St. Louis; St. Louis College of Physicians and Surgeons, 1886; aged 84; died, July 22, in the Lutheran Hospital of arteriosclerosis.

Alice Genevieve Blackadder Merchant, El Paso, Texas; Eclectic Medical College of the City of New York, 1891; aged 80; died, June 1, of arteriosclerosis.

John W. L. Cooper, Chattanooga, Tenn.; Tennessee Medical College, Knoxville, 1901; formerly health officer; aged 61; died, July 24, of cerebral hemorrhage.

John Edward Auchmuty ☉ Tamaqua, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1906; aged 55; died, June 18, in Buffalo.

Hubbard C. Wait, Etta, Miss.; Memphis (Tenn.) Hospital Medical College, 1903; veteran of the Spanish-American War; aged 64; died, June 18.

Oscar McLaughlin, Jackson, Ohio; Columbus Medical College, 1891; member of the Ohio State Medical Association; aged 74; died, June 30.

John Dustin Pollard, Chicago; Bennett College of Eclectic Medicine and Surgery, Chicago, 1915; aged 70; died, June 23, in Lake Geneva, Wis.

Thomas F. Jones, Denver; College of Physicians and Surgeons, Keokuk, Iowa, 1883; aged 85; died, June 25, in the Good Samaritan Hospital.

Arthur Edwin Darling ☉ Lynn, Mass.; Harvard Medical School, Boston, 1906; served during the World War; aged 61; died, June 19.

Arthur Stirling Gorrell, Regina, Sask., Canada; McGill University Faculty of Medicine, Montreal, Que., 1890; aged 70; died, June 3.

John Davis Robinson, Waller, Texas; Atlanta (Ga.) Medical College, 1889; aged 78; died, June 14, of cerebral thrombosis.

Joshua R. McCally, Dayton, Ohio; Eclectic Medical Institute, Cincinnati, 1890; aged 76; died, July 8, of cerebral hemorrhage.

Mary A. Baron Monroe, Wheeling, W. Va.; Eclectic Medical Institute, Cincinnati, 1889; aged 83; died, June 27.

Jesse J. Wells, Glass, Tenn.; University of Louisville (Ky.) Medical Department, 1880; aged 83; died, June 29.

Bureau of Investigation

MISBRANDED PRODUCTS

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE.—These Notices of Judgment are issued under the Food, Drug and Cosmetic Act and in cases in which they refer to drugs and devices they are designated D. D. N. J., cosmetics C. N. J., and foods F. N. J. The abstracts that follow are given in the briefest possible form: (1) the name of the product; (2) the name of the manufacturer, shipper or consignee; (3) the composition; (4) the type of nostrum; (5) the reason for the charge of misbranding, and (6) the date of issuance of the Notice of Judgment—which is considerably later than the date of the seizure of the product and somewhat later than the conclusion of the case by the Food and Drug Administration.]

Anthel Tablets.—Anthel Co., Philadelphia. Composition: aminopyrine and sal ethyl carbonate. For prevention of periodic pain and relief of arthritis, neuritis, rheumatism, toothache and some other things. Declared potentially injurious if used as directed.—[D. D. N. J., F. D. C. 15; May 1940.]

B. B. Headache Powders.—Specialty Sales Co., Atlanta, Ga. Composition: acetanilid, aspirin, caffeine and potassium bromide. Declared potentially injurious if used as directed.—[D. D. N. J., F. D. C. 4; May 1940.]

B. C. Headache Powders.—B. C. Remedy Co., Durham, N. C. Composition: essentially acetanilid, aspirin, caffeine, and potassium bromide. Declared potentially injurious if used as directed.—[D. D. N. J., F. D. C. 1; May 1940.]

Booth's Cough and Cold Remedy.—J. F. Booth, Harbor Springs, Mich. Composition: essentially small amounts of extracts of plant material, ammonium chloride and menthol with sugar, alcohol and water. Falsely represented as a remedy for coughs and colds, consumption, bronchitis and all inflamed conditions of the lungs and bronchial tubes.—[D. D. N. J., F. D. C. 96; May 1940.]

Cachets Algocratine.—E. Lancosme, Paris, France. Composition: acetophenetidin, aminopyrine and a small amount of caffeine. Pain killer. Declared potentially injurious if used as directed.—[D. D. N. J., F. D. C. 12; May 1940.]

Causalin.—Amfre Drug Co., New York. Composition: tablets and capsules containing aminopyrine, salicylic ethyl ester carbonate and a sulfonate such as quinolinesulfonate. For arthritis. Declared potentially injurious if used as directed.—[D. D. N. J., F. D. C. 8, 9 and 76; May 1940.]

Cidie Comfort Compound.—Hy'ne Co., Chicago. Composition: aminopyrine. Pain killer. Declared potentially injurious if used as directed.—[D. D. N. J., F. D. C. 13; May 1940.]

Daily Vitamins.—Daily Vitamins, Inc., Cincinnati. Composition: not more than 10 international units of vitamin B₁ per capsule, whereas product was represented to contain 200 such units.—[D. D. N. J., F. D. C. 75; May 1940.]

Dixie Fever and Pain Powder.—Swamp & Dixie Laboratories, Inc., Fort Smith, Ark. Composition: acetanilid, caffeine, baking soda and charcoal. Declared potentially injurious if used as directed.—[D. D. N. J., F. D. C. 6; May 1940.]

Dunwoody's Turpentine Emulsion.—Sam Swidler, Chicago. Composition: essentially mineral oil, a small amount of turpentine, traces of hypophosphites, an arsenic compound, quinine alkaloid, an organic iodine compound, glycerin and water. Falsely represented as a remedy for bronchial trouble, as a health builder and system purifier and as a remedy for malaria, typhoid and other wasting fevers, pneumonia, la grippe and influenza.—[D. D. N. J., F. D. C. 45; May 1940.]

Eau Sublime Instantaneous Hair Coloring.—Guilmard Co., Inc., New York. Composition included paraphenylenediamine. Declared potentially injurious if used as directed.—[C. N. J., F. D. C. 13; May 1940.]

E E Powders.—E E Medicine Co., Greenville, S. C. Composition: acetanilid, 4.99 grains per powder, aspirin and potassium bromide. For simple headache, neuralgia, muscular pains, head colds and fever. Declared potentially injurious if used as directed.—[D. D. N. J., F. D. C. 7; May 1940.]

Goody's Headache Powder.—Goody's, Inc., Winston-Salem, N. C. Composition: acetanilid, aspirin, caffeine and potassium bromide. Declared potentially injurious if used as directed.—[D. D. N. J., F. D. C. 3; May 1940.]

Hartshorn's Headache Powders.—E. Hartshorn & Sons, Inc., Northampton, Mass. Composition: essentially acetanilid, caffeine, baking soda and flavoring materials. For simple headache, sleeplessness, nervousness and colds. Dangerous to health if used as directed.—[D. D. N. J., F. D. C. 79; May 1940.]

Hed Klear.—Van Patten Pharmaceutical Co., Chicago. Nasal vaporizer. Accessory medicament, "Hed Klear Essence" was a mixture of volatile oils (including eucalyptus and menthol) with alcohol, acetone and water. Dangerous to health when used as directed.—[D. D. N. J., F. D. C. 39; May 1940.]

Hed-Lyte.—Hed-Lyte Co., Dallas, Texas. Composition: acetanilid, sodium bromide and caffeine. To relieve pain in simple headaches, simple neuralgia, muscular aches and pains; for feverish conditions due to colds and for nervousness due to excesses; for menstrual pains and for headache following alcohol or tobacco excesses. Declared potentially injurious if used as directed.—[D. D. N. J., F. D. C. 5; May 1940.]

Loris Permanent Lash and Brow Colure.—Loris Laboratories, Chicago. Composition included paraphenylenediamine. Declared potentially injurious if used as directed.—[C. N. J., F. D. C. 5 and 6; May 1940.]

Madam C. J. Walker's Tan-Off.—Madam C. J. Walker Manufacturing Co., Indianapolis. Contained ammoniated mercury. For freckles and skin blotches and for brightening sallow and dark skin. Declared potentially injurious if used as directed.—[C. N. J., F. D. C. 17 and D. D. N. J., F. D. C. 67; May 1940.]

Nazoscope.—Murray Laboratories, San Francisco, Santa Monica and Pacific Palisades, Calif. Nasal vaporizer. Accessory medicament, "Nazone," consisted essentially of volatile oils (including spearmint) with alcohol and water. Dangerous to health when used as directed.—[D. D. N. J., F. D. C. 40; May 1940.]

O. B. C. Capsules.—Thyrole Products Co. and Frank & Black, Philadelphia. Composition included thyroid and phenolphthalein. For obesity. Dangerous to health when used as directed.—[D. D. N. J., F. D. C. 41; May 1940.]

O. J.'s Beauty Lotion.—O. J.'s Beauty Lotion Co., Shreveport, La. Composition included corrosive sublimate. For removing pimples, freckles, tan and sunburn. Declared potentially injurious if used as directed.—[C. N. J., F. D. C. 19 and D. D. N. J., F. D. C. 72; May 1940.]

Othine.—Othine Laboratories, Inc., Buffalo. Contained ammoniated mercury. Skin and freckle bleach. Declared potentially injurious if used as directed.—[C. N. J., F. D. C. 20 and D. D. N. J., F. D. C. 69; May 1940.]

Pate-O-Graph.—H. W. Gillespie, Baltimore, and Tobin & Snell, New York. Nasal vaporizer. Accessory medicament labeled "Patol" was approximately 80 per cent of volatile oils (chiefly eucalyptus), approximately 20 per cent alcohol and a small amount of an ammonium compound. Dangerous to health when used as directed.—[D. D. N. J., F. D. C. 36; May 1940.]

Pen-E-Scope.—Pen-E-Scope Laboratories, Chicago. Nasal vaporizer. Accessory medicament consisted essentially of eucalyptus oil with small amounts of pine oil, camphor, menthol and acetone. Dangerous to health when used as directed.—[D. D. N. J., F. D. C. 37; May 1940.]

Peranol.—Peranol Products, Chicago. Nasal vaporizer. Accessory medicament, "Peranol Nasal Emollient" consisted of volatile oils including eucalyptus, camphor and menthol with approximately 19 per cent of alcohol. Dangerous to health when used as directed.—[D. D. N. J., F. D. C. 38; May 1940.]

Posner's Black Instantaneous Hair Coloring.—I. Posner, New York. Composition included paraphenylenediamine. Declared potentially injurious if used as directed.—[C. N. J., F. D. C. 15; May 1940.]

Sodasal.—Sodasal Laboratories, Detroit. Composition: aminopyrine, sodium salicylate, compounds of magnesium and calcium, citrates and carbonates, sugar and water. For rheumatic and other pains. Declared potentially injurious if used as directed.—[D. D. N. J., F. D. C. 18, 19 and 78; May 1940.]

Soule's External Lotion.—L. M. Brock & Co., Lynn, Mass. Contained corrosive sublimate. For removing tan, freckles and pimples. Declared potentially injurious if used as directed.—[C. N. J., F. D. C. 22 and D. D. N. J., F. D. C. 70; May 1940.]

Stanback Headache Powders.—Stanback Co., Salisbury, N. C. Composition: acetanilid, aspirin, caffeine, potassium bromide and a trace of baking soda. Declared potentially injurious if used as directed.—[D. D. N. J., F. D. C. 2; May 1940.]

Syn-O-Scope.—Syn-O-Scope Co., Inc., Chicago. Device for treating sinus trouble. Accessory medicament labeled "Synex Syn-O-Scope Refill" consisted of volatile oils such as eucalyptus and camphor with alcohol. Device declared dangerous to health when used as directed.—[D. D. N. J., F. D. C. 35; May 1940.]

Tablets Arbolone.—Arbolone Co., Dayton, Ohio. Composition: desiccated thyroid and extracts of plant drugs including an iodine-containing substance such as bladderwrack and a laxative drug such as cascara sagrada. For obesity. Dangerous to health when used as directed.—[D. D. N. J., F. D. C. 42; May 1940.]

VG-341.—O. E. Henspeter, Vining, Minn. Composition: essentially 94 per cent of sodium hydroxide, 3½ per cent of sodium carbonate and a trace of potassium carbonate. Misbranded because represented as an efficacious vapor gas treatment for hemorrhoids.—[D. D. N. J., F. D. C. 99; May 1940.]

Volz Anti-Rheumin.—Robert W. Brooks trading as the Volz Co., Eric, Pa. Composition: cinchophen, acetophenetidin, aspirin, lithium salicylate and cinchona bark. For rheumatic pain, muscular pain, muscular lumbago, simple headaches, simple neuralgia and gout. Declared potentially injurious if used as directed.—[D. D. N. J., F. D. C. 11; May 1940.]

Correspondence

PULMONARY EMBOLISM FOLLOWING INJECTION TREATMENT OF VARICOSE VEINS

To the Editor:—In my communication (*THE JOURNAL*, May 25, p. 2139) on the article by Dean and Dulin entitled "Pulmonary Embolism Following Injection Treatment of Varicose Veins" (April 6, p. 1344) I emphasized the need for the physician to get an impartial picture of the value or disadvantage of different methods in treating varicose veins. I called special attention to the statistics, which clearly indicate a much higher mortality among persons operated on than among persons treated by injection.

Dr. Harkins (July 20, p. 236) minimizes the impressive statistical figures by a strange interpretation "that case mortality must not be confused with treatment mortality," quoting Sicard and Gaugier, who gave an average of eight injections to a patient. Harkins follows: "Thus, if a patient survives one injection he still has to receive the other seven on the average before his final mortality rate can be computed, and by this time the mortality rate per case approaches that for ligation as given in the literature."

Such argument is misleading and does not help the unbiased reader to find the truth. According to Probst's report, quoted in my reply, "120,000 injections of varicose veins in 15,000 consecutive cases were observed by Sicard and Gaugier without a single mortality." In the very same paper Probst mentions the comprehensive statistics of McPheeters based on 53,000 injection cases and of Kettel on 60,000 injection cases.

LUDWIG ISAAK, M.D., New York.

FAVISM

To the Editor:—I am contriving some research work on a blood disease, "favism," on which many studies were made by my co-workers and myself in 1936. At that time I was professor of medicine at the University of Sassari, Italy, and I had an opportunity to observe many cases of this disease, as it is quite common on the Italian island of Sardinia. The interest in this disease is due not only to the suddenness of the attacks, to the resulting anemia and to the high death rate but also to the fact that complete clarification of its pathogenesis may cast light on the mechanism of hemolysis in general and of hemoglobinurias in particular.

Despite the fact that two cases were reported in volumes 101 and 109 of *THE JOURNAL* by McCrae and Ullery and by Hutton, the disease is not well known in the United States. It is possible that in some cities many cases occur but are not recognized because of the rarity of the condition. A prompt and correct diagnosis would permit the starting of a complete research plan, with a marked advantage not only for patients suffering with favism but also for patients suffering with other blood diseases.

The disease is caused either by ingestion of the seeds of the fava plant (synonyms fava beans, broad beans, jack beans) or by inhalation of the pollen of the same plant. The attack is accompanied by vascular disorders sometimes sufficient to cause collapse. It consists chiefly of a dangerous crisis of hemolysis followed by hemoglobinuria and jaundice and accompanied by fever and often diarrhea. The hemoglobinuria lasts for only a few days, but the picture may be prolonged by secondary anemia.

As the fava beans are a staple article of diet of people of Italian, Greek, Syrian and Egyptian descent residing in the United States, it is possible that attacks of favism occur every year, especially among children, and that cases are frequent in

sections of the country showing a preponderance of residents of the aforementioned foreign lands.

I would appreciate any letter directed to me by physicians in reference to their personal experience on this subject.

A careful observation of every case of jaundice may reveal new cases of favism and allow the starting of research leading to an advance of science in this field.

ALDO LUISADA, M.D.,
73 Martin Street,
Cambridge, Mass.

SAFE DRIVING AT NIGHT

To the Editor:—In the editorial "Safe Driving at Night" in *THE JOURNAL*, June 22, mention was made particularly of headlights and street lights. Although there has been tremendous visual improvement in night driving along these lines, little or nothing has been done about the misguiding and dangerous lights of private enterprise along the highway, particularly those of roadside stands and establishments. Their unshielded lights glaring in all directions frequently tend to misdirect the night driver, who with his more open road tends to speed. This combination of night driving, speed and distracting glare is a competent producing cause of accidents.

There ought to be a law requiring standardization of these dangerous sources of illumination so as to require their proper shielding and reflection in order that their rays will strike the establishments they advertise rather than blind the night driver.

The improved "sealed beam" headlight and modern highway illumination, such as with properly reflected "daylight lamps" (gas filled sodium vapor or neon and the better filaments) as well as reflecting guideposts, will not mean so much where there are disturbing, distracting light glares from privately owned establishments.

It would serve the roadside business man more to have his place illuminated and the night driver better to have his road properly shielded from such lights. Inexpensive shields and reflectors would readily do the trick. Systematic regulation is therefore required not only for the headlights and the highway lights but also for the illumination of private enterprise.

The misguiding lights of the roadside stand should not conflict with the guiding lights of the highway.

WILLIAM L. GOULD, M.D., Albany, N. Y.

"SARCOIDOSIS"

To the Editor:—The editorial on "Sarcoidosis" which appeared in the July 27 issue of *THE JOURNAL* interested us very much. The opening statement of the editorial reads: "Medical literature, particularly during the past four years, reveals a renewed interest in this disease of many eponyms."

It is interesting to note that in a comprehensive article on Boeck's sarcoid which we published in the *Archives of Internal Medicine* (44:721 [Nov.] 1929) we stated in our comment: "It is reasonable to assume from our study that neither the existence nor the significance of the syndrome is as yet appreciated by internists. But, from the perusal of the literature and from the observation of patients with this condition at clinics and at dermatologic clinical conferences, it is evident that the malady is not uncommon."

Our patient, a white man aged 52, had sarcoid lesions in the ears, on the eyelids, on the face and on the trunk. He complained of weakness, cough and hemoptysis. Bilateral hydrothorax was also present, and a total of 4,585 cc. of pleural fluid was removed from the right pleural cavity and 4,955 cc. from the left side on several aspirations. The pleural fluid yielded a positive Wassermann reaction, as did the patient's blood.

At postmortem examination, sarcoid lesions similar to those found on the skin were found in the epicardium, bronchial mucosa and mucosa of the ileum. Sections of tissue stained for bacteria (including the tubercle bacillus) revealed none. The diagnosis of Boeck's sarcoid was confirmed by histologic studies of the lesions.

At the time of the publication of our paper we concluded that "Boeck's sarcoid is an inflammatory, chronic infectious granuloma. The rational etiologic attitude to assume toward this condition is that it is caused by syphilis as well as by tuberculosis." Our contention that Boeck's sarcoid could be caused by syphilis is based on the clinical, histologic and post-mortem study of our patient.

MITCHELL BERNSTEIN, M.D.
FRANK W. KONZLEMAN, M.D.
DAVID M. SIDLICK, M.D.
Philadelphia.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

OSTEOPOROSIS

To the Editor:—A woman aged 61 has roentgenograms which show a definite postmenopausal osteoporosis. Besides, some of the other vertebrae show definite arthritic changes. She complains of pain in and around the left shoulder, in the chest and in the back. She also has a large gallbladder with a large solitary stone; however, the organ functions perfectly well, as is shown by the dye administration at the time the patient was roentgenographed. There is spasticity of the gastrointestinal tract, especially the large bowel, with several discrete diverticula in the region of the sigmoid. There is some enlargement of the cardiac image to the left of the midline, especially in the region of the ventricles. Blood examination is essentially negative. Fasting blood sugar is 114, nonprotein nitrogen 35, cholesterol 384. The Hinton and Kahn reactions are negative. The basal metabolic rate is plus 3. The left ventricle is dilated and hypertrophied, the aorta slightly widened. The hilar region is moderately increased in width and density. The electrocardiogram shows normal rhythm, rate 60, left axis deviation, inverted T_s. The patient has a generalized obliterative and arteriosclerotic process throughout, especially in the lower extremities. The dorsalis pedis and posterior tibial pulsations are absent. Genito-urinary and gynecologic examinations by the local specialist brought negative results. For about three months the patient has complained of terrific pain in the lower part of the abdomen. She describes them as "menstrual" pains. Since the many examinations have proved negative, I came to the conclusion that these abdominal pains may be a continuation of the obliterative and arteriosclerotic process; and that some of the vessels of the mesentery or some vessels near the descending aorta became involved. Under frequent and small doses of glyceryl trinitrate these pains have subsided. For her osteoporosis I am giving the patient intramuscular injections of theolol. The thing I am interested most in at this time is the mode of treatment of the osteoporosis. In addition to the theolol I wish to give the patient some calcium. Just in what form, how much, how often and how long are the theolol and calcium to be administered? Is there any specific treatment for osteoporosis? For the obliterative condition the patient is using the latest machine recommended by Dr. Seibert with apparent good results. There is also a mild colitis for which a smooth diet, belladonna and a colloidal suspension of aluminum hydroxide is given.

M.D., Connecticut.

ANSWER:—Osteoporosis in a patient 61 years of age is exceedingly common. It has been suggested that demineralization of the human skeleton, often associated with pain in the weight bearing joints, with or without x-ray evidence of arthritic articular changes, is a normal condition of age quite comparable to gray hair. The fact that some patients show little or no loss of the mineral salts from the bones, however, would indicate that it is not entirely necessary with advancing years.

This osteoporosis may be produced as a result of diet which for many years is intermittently inadequate in its calcium content or as a result of faulty absorption of the minerals contained in the food, even though the diet may be adequate in these elements. These factors may hold when there is a chronic inflammatory condition in the gastrointestinal tract, chronic achlorhydria or possibly extreme atrophy of the intestinal mucosa. It is probable that a diet which is deficient in vitamin D for a period of many years may also lead to a slow

loss of minerals from the bones. Adenoma or hyperplasia of the parathyroid glands may play a part. Other factors undoubtedly are concerned, but any one of these or a combination of the four might explain the situation in the case referred to.

There is no specific treatment for osteoporosis. Some success has resulted from the administration of vitamin D in the form of one of the more easily available concentrates, in addition to a diet which is rich in its calcium and phosphorus content. There is little scientific evidence to indicate that the addition of inorganic calcium salts is of any particular advantage. The average individual can store a maximum of only a few hundred milligrams of calcium in a day. It is quite possible to create a positive calcium balance with the storing of 0.5 Gm. of calcium or more a day without the addition of inorganic salts. There is also some danger of giving massive doses of calcium either by mouth or intravenously, particularly to patients who already have evidence of vascular disease. The reference to terrific pain in the lower part of the abdomen for three months' duration is suggestive of malignant neoplasm. Metastases of osteolytic tumors not infrequently produce a roentgenographic picture of generalized osteoporosis in which a definite tumor outline is difficult or impossible to demonstrate.

If there are other manifestations to support a diagnosis of adenoma of the parathyroid gland, the first therapeutic procedure should be an operation to remove this tumor.

OFFSET PRINTING SPRAY

To the Editor:—Can you give information on a spray solution made by the DeVilbiss Company "for the prevention of offsetting" (type DHOS). This spray is used in a large printing concern and is sprayed continuously on freshly printed sheets to prevent the fresh ink from soiling the bottom of the next or top sheet. When this spray dries a powder is deposited and accumulates on everything in the vicinity of the machine. Some of the employees of this concern have wondered whether there is any possible harm from contact or inhalation of this spray. Are there any harmful ingredients or any records of any allergy or other trouble caused by this particular spray?

William C. Stephenson Jr., M.D., Roanoke, Va.

ANSWER:—The DeVilbiss Company advises that the solid portion of this offset printing material is acacia. Acacia and cornstarch are each widely used for this purpose. Ordinarily these substances are suspended in a quick-drying alcohol. Numerous instances of asthma have appeared among printers exposed to this operation. Printers sensitized to starch are not disturbed by acacia, and vice versa. At the meeting of the American Public Health Association in Kansas City, Mo., in 1938 it was recommended that offset drying be accomplished by the rapid running of the wet sheet over a band of flame or other heated surface across the press. As stated in the query, the spray process favors the rapid dispersion of a fine and inhalable dust with every sheet printed. The disease that arises is genuinely occupational and at times wholly incapacitating for this form of printing.

HYPERCHROMIC ANEMIA IN BEAUTY PARLOR OPERATOR

To the Editor:—A patient has had anemia for eight years. She is 44 years old, is married, has had no pregnancies and is a beautician by trade. A complete physical examination reveals only some slight systolic tenderness over the right lower quadrant of the abdomen, a rough systolic murmur in the third left interspace adjacent to the sternum and a mild pyorrhea. She is somewhat overweight, of healthy appearance, has normal menstrual periods and complains only of some tiredness. The family history is negative for pernicious anemia but the patient's mother has diabetes. Blood tests reveal hemoglobin 11.6 Gm. (75.2 per cent), red cells 3,170,000, white cells 5,600, polymorphonuclear leukocytes 57 per cent, lymphocytes 41 per cent, eosinophils 2 per cent, blood sedimentation 49 mm. per hour (Wintrabe method), Wassermann reaction negative. Urinalysis is negative. Gastric analysis reveals a free acid of 28 and a total of 50. The stained smear reveals much variation in size and shape of the red cells, which are uniformly well filled with hemoglobin. The question which arises is as to the cause of the hyperchromic anemia. All facies have been checked. The patient has been treated with adequate doses of liver, iron and vitamin B₁₂, all without marked success. The count went above 3,600,000 on only two occasions. Is it possible that she might be allergic to some of the products used in beauty work with consequent depression of bone marrow hemopoietic activity?

M.D., Indiana.

ANSWER:—The blood picture is that of a mild hyperchromic anemia, the etiology of which is not clear. Pernicious anemia should be considered but is unlikely owing to the presence of free acid in the stomach and the lack of response to liver therapy. However, the patient may be suffering from so-called acrostatic anemia, which resembles pernicious anemia in every way except in its lack of response to liver therapy.

A chronic low-grade hemolytic process may be present in this case, for hemolytic anemia presents a similar blood picture.

Further examination of the blood is necessary, including a reticulocyte cell count, red cell fragility test and icteric index. The urine and stool should be examined for urobilin. No mention is made of an enlarged spleen. This is usually present in hemolytic anemia but is not evident in all cases.

It is also advised that a sternal puncture be done and the bone marrow examined. This is often of great diagnostic value. A hyperplastic bone marrow, with an increase in erythroid elements, will point to a hemolytic process affecting the peripheral red blood cells. A hypoplastic bone marrow will point to a depression of the erythroid elements in the marrow.

A not infrequent and often obscure cause for hyperchromic anemia is hypothyroidism. The symptoms of the latter may be mild. The basal metabolic rate should be determined, since the patient is overweight and complains of some fatigue.

The question concerning the relation between the anemia and the patient's occupation is an interesting one. Depression of the bone marrow or a hemolytic process resulting from hair dye, for example, has been observed in occasional cases but is rare. In such cases the preparation was frequently applied directly to the scalp. In this case, however, it is unlikely that exposure to the products handled by the patient is a factor in the anemia. Nevertheless, because of the persistence of the anemia, it would perhaps be advisable for the patient to stay away from her occupation for several weeks to determine whether any improvement occurs.

Since prolonged treatment with iron, liver and vitamin B₁ has been of no avail, blood transfusion may be indicated. After one or two transfusions the effect on the blood picture should be determined. Finally, it must be kept in mind that the patient may be suffering from a refractory anemia of unknown etiology, instances of which have been reported by Rhoads. Treatment in such cases is of no avail.

ARTERIOSCLEROSIS, INJURY, VASCULAR SYPHILIS AND CEREBRAL THROMBOSIS

To the Editor:—A blacksmith aged 59, with noncontributory personal and family history and in good general health, while carrying a heavy round iron in his left hand caught the cuff of his right pant leg on a pipe and fell to the ground. In falling he cast the round iron from him and landed on his right hip and hand; except for the momentary jar and a skinned place on his right ankle there was no apparent disturbance from the fall. Four or five hours later, about two hours after he had gone to bed, he woke up cold and noticed that his right leg was "jittering" and that he could not hold it still. During the following four days this "jittering" in the right leg continued and by the second day he noticed that he dropped his hammer rather frequently and that his right arm had also become "jittery." On examination at this time he was found to be mentally somewhat excitable and there were almost constant and continuous choreiform movements of the right arm and right leg. These movements seemed to start from the shoulder and hip and were uncontrollable by the patient. There was no pain, no muscle spasm, no disturbance of skin sensation, and no observable change in deep or superficial reflexes. Other than the mental disturbance and movements there were no physical or neurologic abnormalities. The blood Wassermann reaction was positive; the spinal Wassermann test and gold curve were negative. He was considered to have a central nervous system syphilis with beginning degeneration. He was treated with intravenous arsenicals and intramuscular bismuth compounds and during the following year and a half has gradually improved both mentally and physically. He is now mentally alert, cooperative, of good memory for persons, places and events, and seemingly in his usual mental condition. The choreic movements are quite moderate and voluntarily controllable for short periods of time. Neurologic examination is negative except for the movements. There is no atrophy in the affected members. The eye-grounds show sclerosis of the retinal vessels. The systolic blood pressure has been from 130 to 140 throughout. The blood Wassermann and Kahn reactions have continued positive on six examinations made at intervals during this period and in three different laboratories. Spinal fluid tests at the same intervals have been consistently negative (including Wassermann, colloidal gold and globulin tests and cell counts). Two spinal fluid tests were made before treatment was started. What would be the likelihood of an active central nervous system syphilis with a constantly normal spinal fluid? Is it at all possible that a fall such as he had could cause a cerebral hemorrhage in some motor tract and account for the hemichorea? Would not the time interval of four and one-half to five hours following the jar be too long for such a theory? The patient has no previous knowledge of syphilis, and treatment has made no impression on his blood Wassermann reaction. Is it possible to have a constantly positive blood Wassermann reaction without syphilis? Would you advise continuation of active syphilitic treatment? Have you any other suggestions for diagnosis or treatment?

Ralph F. Palmer, M.D., Phoenix, Ariz.

ANSWER:—The fall of a man who was somewhat arteriosclerotic, as shown by later examination of the retinal vessels, and was also 59 years old and suffering from vascular syphilis, in all probability gave rise to a cerebral thrombosis. Unlike the usual cerebral thrombosis resulting in a hemiplegia, this lesion, probably in the left corpus striatum, produced a condition of hemichorea. There is experimental and clinical evidence suggesting that lesions of the caudate nucleus and the putamen of

the corpus striatum will cause choreiform movements, although it is also known that lesions in other masses of gray matter in the basal ganglion will be made evident by chorea or other involuntary movements. The lesions of chorea are thus not sharply localized, but in the case presented exact localization is not particularly important.

The onset, course and residual symptoms are consistent with cerebral thrombosis. The accident may be labeled as a secondary cause, in spite of the fact that no cerebral trauma is known to have taken place. Is the thrombosis on the basis of arteriosclerosis or syphilitic endarteritis? One cannot be sure. The latter seems most likely, as there is no evidence of hypertension; the man's age may account for the amount of retinal sclerosis found, and some recovery has taken place under antisyphilitic treatment. There is no evidence that the man ever had more than vascular syphilis. The central nervous system was never involved, except by the chance of a cerebral artery being the seat of the endarteritis, and examination of the cerebrospinal fluid was repeatedly negative. Central nervous system syphilis with a completely negative cerebrospinal fluid—cells, globulin, colloidal gold test and Wassermann test—is not considered possible, except as an end result for a thoroughly treated patient. Cerebral hemorrhage seems less likely than thrombosis, particularly if the cerebrospinal fluid was negative at the start of the disease. An interval of from four and one-half to five hours after the accident would be more consistent, moreover, with thrombosis than hemorrhage. The presence of repeatedly positive blood Wassermann tests, before and after treatment, strongly suggests syphilis.

It would appear that thorough treatment had been carried out. The residual chorea must be considered as the permanent after-effect of the thrombosis. Continued treatment of a man who has made a good if not complete recovery, both mentally and physically, is not advised. He should be examined by a physician, preferably one who is familiar with the details of his past history and treatment, twice a year and the cerebrospinal fluid should be examined once a year. If changes occur, treatment must be guided by those changes. Many physicians treat patients who have this type of history at least once a year with short courses of bismuth compounds, six to eight injections, regardless of the tests. Such a procedure has much to recommend it; patients with long-standing syphilis are often kept at a high level of health and recurrences are probably prevented by some treatment every year. This type of syphilis is never "cured" in the sense of complete eradication. The patient may be cured of his symptoms, however, and remain so.

HERNIATION THROUGH MESENTERY

To the Editor:—I have just encountered an anomaly in the abdomen which I have never seen and of which I have never heard. In opening an abdomen presenting acute symptoms, I found about 6 feet of gangrenous jejunum and ileum herniated through an opening in the base of the mesentery of the jejunum. Strangely a loop of jejunum had passed through from one side and a loop of ileum from the opposite side in opposing directions, and both were completely gangrenous. This aperture was not that formed by the ligament of Treitz but directly through and through the mesentery. I resected all gangrenous intestine and did a side to side anastomosis, leaving about 12 inches of intestine below the stomach. How frequently has this condition been found and what have been the operative results? What also have been the operative results of herniation through the inferior duodenal fossa, which results should compare in some manner with what I might expect? This patient has never been nauseated, either before or after surgery, and was ill only fourteen hours before operation. Her postoperative condition is satisfactory after eighteen hours. Have you any suggestion concerning her digestive management immediately following operation or later, if such the case may be?

H. R. Wilber, M.D., Jeffersonville, Ind.

ANSWER:—Hansmann and Morton (*Arch. Surg.* 39:973 [Dec.] 1939) report a fatal case of herniation of the cecum through a hole in the mesentery of the small bowel. These authors studied 467 cases of internal hernia collected from the literature and found that sixty involved the transverse mesocolon and that thirty-eight were mesenteric. Hernia of the transverse mesocolon was commoner in women but intra-abdominal hernias, as a whole, were commoner in men. Mitchell (*Ann. Surg.* 30:505, 1899, quoted by Watson) found holes in the mesentery of three subjects in 1,600 necropsies. Treves (*Intestinal Obstruction*, London, Cassell & Co., Ltd., 1899, p. 65, quoted by McIver) said that the openings are most frequently found in the mesentery of the lower portion of the ileum and may be traced to abdominal injury. Watson (*Ann. Surg.* 106:1097 [Dec.] 1937) says that up to 1937 only thirty-seven cases of intestinal obstruction due to defect in the mesentery had been reported. Watson reported an additional case in which nearly the entire lower portion of the ileum was herniated through a hole in its mesentery about 6 cm. proximal to the ileocecal valve. His patient

recovered after operation. Edwards (*THE JOURNAL*, July 23, 1932, p. 278, quoted by Watson) found eleven recoveries in thirteen cases in which reduction was effected and four recoveries in eight cases in which resection was necessary. (See also Cutler, G. D.: Mesenteric Defects as a Cause of Intestinal Obstruction, *Boston M. & S. J.* 192:305 [Feb. 12] 1925; Bona, T.: *Zentralbl. f. Chir.* 65:144 [Jan. 15] 1938; Baty, J. A.: *Brit. M. J.* 1:671 [March 26] 1938; Smith, A. M.: *Ann. Surg.* 96:292 [Aug.] 1932; Menegaux, G.: *J. de chir.* 43:32 [March] 1934.)

As soon as fluids are tolerated by mouth, these may be gradually increased and after three or four days a residue-free diet may be employed. A soft diet may be given at about the seventh to the tenth day and a general diet by the fifteenth day.

VASODILATATION PHENOMENON AFTER NICOTINIC ACID

To the Editor:—Four weeks ago a postmenopausal, somewhat neurotic woman had a dry, scaling dermatitis. In conjunction with local treatment, I prescribed nicotinic acid 50 mg. three times a day. After taking the first tablet with half a glass of water the patient telephoned me that she was having severe "hot flashes" and felt weak and dizzy. This lasted for perhaps fifteen to fifty minutes. Two days later I again persuaded her to take the nicotinic acid tablets. Again she felt hot and flushed over the face, scalp and neck and complained of weakness and vertigo. The dose was cut to 25 mg. four times a day and the patient tolerated the drug thenceforth. Last week I again prescribed nicotinic acid three times a day to a man aged 50. He also noticed similar flushes of the face, warmth and some vertigo. After reassurance he again took the tablets and had two mild attacks, followed by another severe one and then developed cheilitis. Are there any similar reports of sensitivity to nicotinic acid? I at first dismissed the first patient's complaint as being psychogenic in origin until the second, of more stable personality, experienced a similar disturbance. Joseph C. Anderson, M.D., Ebensburg, Pa.

ANSWER.—The reactions described are probably due to a vasodilatation phenomenon which usually occurs when nicotinic acid is administered orally in doses of from 50 to 100 mg. or intravenously in doses of 10 mg. These reactions are transitory and, although unpleasant, are harmless (Spies, T. D.; Bean, W. B., and Stone, R. E.: *The Treatment of Subclinical and Classic Pellagra*, *THE JOURNAL*, Aug. 13, 1938, p. 584). They are described in more detail by W. B. Bean and T. D. Spies in a publication which will appear in the *American Heart Journal*. The dizziness and vertigo occur in a certain number of cases. The cheilitis, or cheilosis, appears frequently in individuals who are on a poor diet even though they are taking nicotinic acid. The cheilitis is a result of a deficiency of riboflavin in the diet and not of nicotinic acid, and it disappears following the administration of from 3 to 5 mg. of riboflavin daily for a week.

DISSECTING ANEURYSMS

To the Editor:—A white man aged 60 died of hemopericardium secondary to rupture of a dissecting aneurysm of the ascending portion of the aortic arch. A blood Wassermann test gave negative results. What are the etiologic possibilities? There were no apparent symptoms until a few days before death, when the patient underwent some unusual muscular effort. Could this have caused a fracture of the intima with resulting aneurysm? Could an injury (severe bodily injury with probably some squeezing of the chest) sustained some eight or nine years ago have caused a dissecting aneurysm which remained quiescent all those years? M.D., Pennsylvania.

ANSWER.—Dissecting aneurysms, when clearly of traumatic origin, are more commonly seen in the transverse and descending portions of the aortic arch than in the ascending portion. The location of this lesion suggests that the aorta might well have been previously damaged by syphilis, in spite of the negative blood Wassermann reactions. A microscopic study of the aorta, presumably possible from the accurate description of the gross observations given, would help to determine the specific etiology in this case. A relatively small percentage of cases of aneurysm of the aorta are caused by trauma. Among those so caused, dissecting aneurysms are relatively frequent and some of these patients may survive for ten or more years after the onset without symptoms. The type of injury most commonly associated with the development of a dissecting aneurysm is one involving a fall on an object which strikes a fairly localized portion of the chest wall or an accident involving squeezing of the chest. There is a difference of opinion about the effect of unusual muscular effort on the development of hemorrhages from the vasa vasorum, which in turn might injure the intima sufficiently to cause rupture of it or thrombosis over the injured area. The unusual muscular effort might well have led to a further extension of the dissecting aneurysm, which ultimately ruptured into the pericardium. Whether the muscular effort alone could have caused a sufficient dilatation of the aorta under increased pressure in a way that resulted in the original rupture

of the intima is problematic but not impossible, especially in the presence of what might be regarded as normal changes in the aorta of a man of 60.

LONG-CONTINUED ADMINISTRATION OF PHENOBARBITAL

To the Editor:—For how long may one take thirty drops of elixir of phenobarbital three times a day? A patient has been taking this amount for six months with no apparent bad effect. It has been suggested that she discontinue the drug, but her referring physician says that she need not stop as it will produce no harm. This is not a controversial matter, but what is best for the patient?

Leon J. Menville, M.D., and Joseph N. Ane, M.D., New Orleans.

ANSWER.—The barbiturates which contain unsaturated chemical groups in the molecule are largely broken down in the liver, and usually their action is not long in duration. Those which contain saturated groups do not undergo metabolism and are excreted, largely unchanged, by the kidneys. Their action is much longer continued. If the liver is functioning properly, the first mentioned group of barbiturates are disposed of promptly. A damaged liver probably could not destroy them. If the kidneys are functioning properly, the saturated barbiturates are excreted.

Phenobarbital is a saturated barbiturate. The elixir of phenobarbital contains 0.4 per cent of the drug. The patient in question is receiving 0.008 Gm. (one eighth grain) of phenobarbital three times daily. This is one fourth of the U. S. P. dose. Many individuals appear to suffer no harmful effects following long-continued intake of barbiturates, but others may acquire addiction even with small dosage. It is always wise to discontinue a drug when possible, as its cumulative effects can never be anticipated in an individual case.

SULFANILAMIDE POWDER

To the Editor:—There is some question as to whether it is safe to use sulfanilamide powder, unless first autoclaved in open wounds. What is the possibility of this drug containing tetanus spores when secured by pharmaceutical houses and what chemical changes are produced by autoclaving?

Fred F. Davis, M.D., Roanoke, Va.

ANSWER.—As far as available reports go there have been no reactions or infections following the topical use of sulfanilamide powder. Crystalline sulfanilamide is hard to sterilize. The question as to whether the crystalline drug might possibly contain tetanus spores has not been raised previously, and as far as is known there are no reports on this point. There is also no information concerning the chemical changes which might take place if crystalline sulfanilamide is autoclaved. It is known that occasionally prolonged autoclaving of sulfanilamide solutions brings about an oxidation of the drug which gives rise to the formation of a discolored yellow or brown solution. Such discolored solutions or discolored crystalline sulfanilamide itself should never be used.

ALLERGIES AND HYDROCHLORIC ACID

To the Editor:—Kindly tell me the status of the intravenous use of hydrochloric acid in intestinal and other allergies.

Alfred Ellison, M.D., South Bend, Ind.

ANSWER.—There is no authentic literature at the present time supporting the use of intravenous hydrochloric acid in intestinal and other allergies. It is apparently a fad which was given up a long time ago and certainly it is not being utilized by the majority of allergists. Whatever virtue such therapy might have or might have had is probably based on the production of mild shock therapy, probably due to the hypotonicity of the fluid injected. There is no good evidence that this type of treatment deserves a place in the management of allergic diseases.

UNDESCENDED TESTIS AND MALIGNANCY

To the Editor:—A patient aged 38 has an occasional pain in the right testis, which is about half normal size. The testis is in the upper part of the scrotum and was put there twenty years ago in an operation for undescended testis. It has never grown. His sexual history is normal. What chance is there of this becoming malignant? Would you advise removal as a prophylactic against a possible malignant condition?

M.D., Texas.

ANSWER.—Although the best available statistics reveal that the percentage of malignancy in undescended testes is higher than in testes in the normal position, the removal of this testis as a prophylactic against possible malignancy would probably not be advisable. Since it has been in the upper part of the scrotum for the past twenty years, the possibility of its becoming malignant is no greater than it would be if it were a normal testis.

Medical Examinations and Licensure

COMING EXAMINATIONS

BOARDS OF MEDICAL EXAMINERS

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in *THE JOURNAL*, August 17, page 557.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Parts I and II, Sept. 11-13, to be given in medical centers having five or more candidates desiring to take the examination. Part III, Baltimore and New York during October and Boston during November. Exec. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Written.* Various centers, Feb. 20. Final date for filing application is December 21. *Oral.* Cleveland, preceding A. M. A. convention. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written.* Various centers, Oct. 28. Applications must be on file not later than Sept. 16. *Oral.* Chicago, Dec. 6-7. Applications for Group A must be on file not later than Nov. 1. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written.* October 21. Applications must be on file not later than September 1. Sec., Dr. William S. Middleton, 1301 University Ave., Madison, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: Chicago, Oct. 18-19. Sec., Dr. R. Glen Spurling, 404 Brown Bldg., Louisville, Ky.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written.* Part I. Group B. Various centers, Jan. 4. Final date for filing application is Oct. 5. Part II. Groups A and B. Cleveland, preceding A. M. A. convention. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: *Oral.* Cleveland, Oct. 5. *Written.* Various centers, March 8. The only written examination during 1941. Applications must be on file not later than Dec. 1. A special oral and clinical examination will be held on the Pacific Coast during 1941 providing there will be enough candidates to warrant it. Applications for this examination should be on file not later than Sept. 15. Sec., Dr. John Green, 6830 Waterman Ave., St. Louis.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: *Oral and written.* New Orleans, January 1941. Final date for filing application is November 15. Sec., Dr. Fremont A. Chaudler, 6 N. Michigan Ave., Chicago.

AMERICAN BOARD OF PEDIATRICS: New York, March 30-31, following the Region I meeting of the American Academy of Pediatrics. Chicago, May 18, following the Region III meeting of the American Academy of Pediatrics. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: *Oral.* New York, December 18-19. Final date for filing application is October 8. Sec., Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: Boston, Sept. 26-29. Sec., Dr. Byrl R. Kirklin, 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Written.* Part I. Various centers, October 21. Final date for filing application is September 15. Sec., Dr. J. Stewart Rodman, 225 S.

AMERICAN BOARD OF UROLOGY: Chicago, February 1941. Applications must be on file not later than Oct. 15. Sec., Dr. Gilbert J. Thomas, 1009 Nicollet Ave., Minneapolis.

Minnesota April Report

Dr. Julian F. Du Bois, secretary, Minnesota State Board of Medical Examiners, reports the written examination for medical licensure held at Minneapolis, April 16-18, 1940. The examination covered twelve subjects and included sixty questions. An average of 75 per cent was required to pass. Forty-four candidates were examined, all of whom passed. Four physicians were licensed by reciprocity and four physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of California Medical School.....	(1939)		88.2
Northwestern University Medical School.....	(1938)		87.1,
87.5, 88.4, 88.8, (1939) 85.2, 89.5,* 90.5, 91.5*			
Rush Medical College.....	(1938)		92.5
University of Chicago, The School of Medicine.....	(1939)		89
University of Illinois College of Medicine.....	(1939)		96.1
University of Iowa College of Medicine.....	(1936)		92.3
State University of Iowa College of Medicine.....	(1938)		86
University of Kansas School of Medicine.....	(1937)		90
Tulane University of Louisiana School of Medicine.....	(1938)		89, 91.3
Johns Hopkins University School of Medicine.....	(1937)		88.1
University of Michigan Medical School.....	(1938)		90.5,
University of Minnesota Medical School.....	(1939)		82.6,* 86.3,* 86.4,* 86.6,* 87.2,* 88.8,* 89.3,
90,* 90.6, 91, 91.2,* 91.2,* (1940) 84.3,* 88.3,* 89.5			
Creighton University School of Medicine.....	(1939)		86.2
University of Nebraska College of Medicine.....	(1937)		87.3
Columbia University College of Physicians and Surgeons.....	(1935)		89.1
University of Rochester School of Medicine.....	(1938)		86.1

Duke University School of Medicine.....	(1938)	85.6
University of Oregon Medical School.....	(1939)	86.3
University of Texas School of Medicine.....	(1928)	89.1
University of Wisconsin Medical School.....	(1938) 89.6, (1939)	90.2
McGill University Faculty of Medicine.....	(1937)	89.6

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Washington University School of Medicine.....	(1937)		Missouri
University of Nebraska College of Medicine.....	(1935)		Nebraska
Marquette University School of Medicine.....	(1935)		Wisconsin
University of Wisconsin Medical School.....	(1935)		Wisconsin

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Yale University School of Medicine.....	(1935) N. B. M. Ex.		
Northwestern University Medical School.....	(1933), (1939) N. B. M. Ex.		
Cornell University Medical College.....	(1937) N. B. M. Ex.		

* This applicant has received the M.B. degree and will receive the M.D. degree on completion of internship.

Wyoming June Report

Dr. M. C. Keith, secretary, Wyoming State Board of Medical Examiners, reports the written examination for medical licensure, held at Cheyenne, June 3-4, 1940. The examination covered twelve subjects and included eighty-one questions. An average of 75 per cent was required to pass. Three candidates were examined, two of whom passed and one failed. One physician was licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of Oregon Medical School.....	(1939)		77.7
University of Wisconsin Medical School.....	(1936)		75

School	FAILED	Year Grad.	Number Failed
University of Nebraska College of Medicine.....	(1938)		1

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Yale University School of Medicine.....	(1934) N. B. M. Ex.		

Missouri Reciprocity Report

Dr. Harry F. Parker, secretary, State Board of Health of Missouri, reports fourteen physicians licensed to practice medicine by reciprocity and one physician so licensed by endorsement. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Illinois College of Medicine.....	(1939)		Illinois
Rush Medical College.....	(1936)		Minnesota
University of Kansas School of Medicine (1934), (1936), (1938, 2), (1939, 4) Kansas			
Johns Hopkins University School of Medicine.....	(1935)		Maryland
Harvard Medical School.....	(1935)		Minnesota
University of Pennsylvania.....	(1935)		New York
University of Tennessee.....	(1938)		Tennessee

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
New York University College of Medicine.....	(1934) N. B. M. Ex.		

Utah June Report

Mr. G. V. Billings, director, Department of Registration, reports the written examination for medical licensure held at Salt Lake City, June 24, 1940. The examination covered ten subjects and included 100 questions. An average of 75 per cent was required to pass. Nine candidates were examined, all of whom passed. Fourteen physicians were licensed by reciprocity and one physician was licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Northwestern University Medical School.....	(1940)		87, 88
Rush Medical College.....	(1939) 82, 82, (1940)		86*
University of Maryland School of Medicine and College of Physicians and Surgeons.....	(1940)		86*
Creighton University School of Medicine.....	(1940)		87*
Temple University School of Medicine.....	(1939)		84
University of Pennsylvania School of Medicine.....	(1939)		85

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Colorado School of Medicine.....	(1936), (1937)		Colorado
Rush Medical College.....	(1906) Washington, (1937)		Illinois
University of Louisville School of Medicine.....	(1939, 2)		Kentucky
Louisiana State University School of Medicine.....	(1940)		Louisiana
Harvard Medical School.....	(1935)		California

Washington University School of Medicine..(1931), (1939)	Missouri
Univ. of Nebraska College of Med. (1936) Nebraska, (1937)	Missouri
New York University College of Medicine.....(1939)	Montana
University of Oregon Medical School.....(1938)	Oregon

School	LICENSED BY ENDORSEMENT	Year Endorsement Grad. of
Creighton University School of Medicine.....	(1938)	N. B. M. Ex.
*License has not been issued.		

Maryland Homeopathic June Report

Dr. John A. Evans, secretary, Board of Medical Examiners of the State of Maryland (Homeopathic), reports the written examination for medical licensure held at Baltimore, June 18-19, 1940. The examination covered nine subjects and included 70 questions. An average of 75 per cent was required to pass. Ten candidates were examined, all of whom passed. The following school was represented:

School	PASSED	Year Grad.	Per Cent
Hahnemann Medical College and Hospital of Philadelphia	(1939)		79,
81, 81, 81, 82, 82, 84, 85, 88, 88			

Massachusetts Endorsement Report

Dr. Stephen Rushmore, secretary, Massachusetts Board of Registration in Medicine, reports twenty-five physicians licensed to practice medicine by endorsement from January 4 through April 22. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Endorsement Grad. of
College of Medical Evangelists.....	(1938)	N. B. M. Ex.
University of Colorado School of Medicine.....	(1938)	N. B. M. Ex.
University of Georgia School of Medicine.....	(1937)	N. B. M. Ex.
Boston University School of Medicine (1930), (1936), (1937), (1938, 3) N. B. M. Ex.		
Harvard Medical School.....	(1933), (1937, 2), (1938, 2)	N. B. M. Ex.
Tufts College Medical School..	(1936, 2), (1937, 2), (1938, 3)	N. B. M. Ex.
Long Island College of Medicine.....	(1938)	N. B. M. Ex.
University of Vermont College of Medicine..	(1928), (1937)	N. B. M. Ex.
McGill University Faculty of Medicine.....	(1933)	N. B. M. Ex.

Oklahoma June Report

Dr. James D. Osborn Jr., secretary, Oklahoma State Board of Medical Examiners, reports the written examination for medical licensure held at Oklahoma City, June 5-6, 1940. The examination covered twelve subjects and included 120 questions. An average of 75 per cent was required to pass. Forty-seven candidates were examined, all of whom passed. Twenty-four physicians were licensed by reciprocity and two physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of Oklahoma School of Medicine.....	(1940)*		78.4,
79.3, 79.7, 80, 80.4, 80.5, 80.5, 80.7, 80.7, 81, 81, 81, 81.5, 81.8, 82, 82, 82, 82.5, 82.5, 82.5, 82.6, 83, 83, 83, 83.4, 83.4, 83.8, 84, 84, 84, 84.2, 84.5, 84.8, 84.8, 85, 85, 85.7, 85.9, 86, 86, 86.5, 86.7, 86.9, 87.6, 88, 89.4			
School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas School of Medicine.....	(1937, 2), (1939)		Arkansas
Northwestern University Medical School.....	(1932)		Kansas
Rush Medical College	(1936)		Illinois
Tulane University of Louisiana School of Medicine..	(1932)		Mississippi,
(1938) Louisiana			
Washington University School of Medicine.....	(1939)		Missouri
University of Nebraska College of Medicine.....	(1928)		Tennessee
Duke University School of Medicine.....	(1936)		California
Western Reserve University School of Medicine.....	(1935)		Ohio
University of Oklahoma School of Medicine.....	(1937)		Colorado
Hahnemann Med. College and Hospital of Philadelphia (1937)			Penna.
University of Philadelphia.....	(1915)		Virginia
Meharry Medical College.....	(1931)		Mississippi
University of Pennsylvania School of Medicine.....	(1938), (1939)		Tennessee
University of Tennessee College of Medicine..	(1927), (1939)		Tennessee
Vanderbilt University School of Medicine.....	(1938)		Tennessee
Baylor University College of Medicine.....	(1937)		Texas
University of Wisconsin Medical School.....	(1936)		Wisconsin
University of Western Ontario Medical School (1936), (1938)			N. Dakota

School	LICENSED BY ENDORSEMENT	Year Endorsement Grad. of
University of Minnesota Medical School.....	(1934)	N. B. M. Ex.
University of Nebraska College of Medicine.....	(1928)	N. B. M. Ex.
* License has not been issued.		

Book Notices

Modern Medical Therapy in General Practice. Edited by David Preswick Barr, A.B., M.D., LL.D., Busch Professor of Medicine, Washington University, St. Louis. Volume I: General Therapy; Methods Used in Therapy; General Diseases. Volume II: Infectious Diseases; Diseases of the Nervous System; Diseases of the Digestive System. Volume III: Diseases of Other Organs and Systems; General Index. Cloth. Price, \$35, per set. Pn. 1200; 1203-2446; 2447-3661, with illustrations. Baltimore: Williams & Wilkins Company, 1940.

This has been a great year for systematic works on the treatment of disease. The volumes edited by Dr. Barr have a distinguished list of contributors who in themselves represent the technic of practice in more than fifty hospitals as well as teaching physicians in many medical schools. The membership of Dr. Barr on the Council on Pharmacy and Chemistry is assurance of the scientific point of view in evaluating therapeutic methods. In the introduction Dr. Barr thanks particularly Dr. Tracy J. Putnam for his contribution on the nervous system and for his aid in editing the other contributions in that field.

After an introductory chapter, which is largely a survey of the history of therapy and which concludes that there can no longer be the slightest excuse for an attitude of therapeutic nihilism, the work begins with a discussion of general methods in therapy including psychotherapy, the use of drugs, vaccines and serums, organotherapy, fluid administration, dietotherapy, physical therapy, balneotherapy, occupational therapy and miscellaneous procedures. This work would in itself constitute a first class single volume on the practical aspects of the treatment of disease. Each of the sections is supplemented by a good bibliography, so that the reader can trace the historical development of each technic. There are innumerable tables and charts providing data in succinct form, especially valuable being the food tables and those classifying sources of light.

Next comes the specialized discussion of various conditions such as diseases of metabolism, diseases of allergy, the deficiency diseases, the intoxications and diseases due to chemical agents. The writers have been chosen with regard primarily to their qualification rather than with regard to any geographic or similar distribution.

The second volume deals with the infectious diseases and those of the nervous and digestive systems, the third volume with diseases of other organs and systems. Each volume has a separate index and there is a general index in volume III covering the entire system. There are a considerable number of illustrations in the volumes and charts and diagrams, all of which are chosen primarily with a view to their great usefulness.

Thus there is now again available a modern consideration of various forms of treatment from men who are known to be qualified. The section on diseases of the ductless glands is itself prepared by a variety of specialists, indicating how highly technical has become the problem of medical care with the rapid advance of modern knowledge. The volumes in this work are numbered consecutively from the first. The books may be heartily recommended to all physicians who wish an up-to-date work as a constantly available reference on the office table.

Fundus Atlas: Stereoscopic Photographs of the Fundus Oculi. By Louis Bothman, B.S., M.D., F.A.C.S., Clinical Professor of Ophthalmology, the University of Chicago, Chicago, and Reuel W. Bennett, Photographer for the Division of Ophthalmology, the University of Chicago Clinics. Cloth covered case. Price, \$17. 50 (7 x 9 inch) cards with 50 original stereoscopic photographs. Chicago: Year Book Publishers, Inc., 1939.

The atlas presents just what the preface claims for it, namely some selected photographs of unusual or important conditions of the fundus. Unfortunately it is not comprehensive enough for a fundus atlas of reference nor is there enough detail or a sufficient number of illustrations to be used as a textbook for teaching. Many of the conditions pictured are most unusual, as for example the picture of opaque nerve fibers. A beginner, seeing this for the first time, would have difficulty recognizing the usual picture of a few strands above or below the disk. There is a question as to the interpretation of some of the photographs. No. 2 is described as a bowl shaped, physiologic excavation; it appears to the reviewer as a partial coloboma of the nerve head even though the vision is normal. The epipapillary membrane in chart 4 is correctly interpreted, but not the usual translucent veil seen over the disk. Neither is the persistent hyaloid at all typical. No. 9, picturing glaucomatous

excavation, does not show the vessels at the bottom of the disk. It would have been better had the camera been focused to show both the surface and disk bottom, even though the latter was not in exact focus. In No. 10 the title is not convincing. The papilledemas are splendid, but a series of photographs of this case in different stages would have been fine for instruction. No. 27, featuring preretinal hemorrhage, does not give the clear outline usually seen in this condition or the level top. The superior retinal vein and central vein thromboses are beautiful pictures. No. 33 reveals a most unusual type of traumatic, proliferating retinitis. No. 36 is a splendid representation of that rare condition retinitis punctata albicans. The types of choroiditis are representative, though it might have been better had No. 39 been supplemented with a picture showing the condition in its active stage. This might be said of No. 46 also, in which a later stage, showing the cherry red spot, would have added considerably to its value. The last photograph, showing detachment of the vitreous, is worth almost the price of the collection. Any one deeply interested in the study of fundus conditions will prize this collection of beautiful photographs. It is to be regretted that, with the large material at the disposal of the author, the skilful technical photography and with his long and excellent teaching experience, there was not a larger and more complete series of photographs presented, outlining, for example, the various stages of choked disk, the variations in the normal disk appearance and outlining detailed stages of retinal arteriosclerosis and the like. He would then have had an atlas that would be invaluable for teachers and for students of ophthalmology.

L'hématologie: Clinique et laboratoire. Par P. Emile Weil, médecin des hôpitaux de Paris. Paper. Price, \$3.25. Pp. 269, with 81 illustrations. Paris: Masson & Cie, 1939.

The author has intended this work to be a presentation of the laboratory procedures essential for the diagnosis and prognosis of diseases of the blood, as well as a cytologic and clinical description of the manifestations of such disorders. The first part of the book is devoted to such topics as the origin of blood cells, physical and chemical constitution of whole blood, enumeration of the formed elements of blood, study of stained and fresh blood, its morphology in normal and abnormal states, the fragility test and its value, blood grouping, sedimentation, coagulation, capillary fragility and sternal puncture. The common causes of the respective abnormalities are briefly mentioned. The author is incorrect in stating that the occasional case of sickle cell anemia seen in the white race is due to a mixture of Negro grandparent, for instances in which the Negro trait could be excluded have been recorded. The erythrocytic changes in malaria are too briefly described to be of much value, and absence of illustrations leaves much to be desired. The hematocrit, so important in the study of red cell volume, receives no mention; neither does the halometer. The author expresses a predilection for the Sahli hemometer, although he describes only the Gowers and Tallqvist hemometers. The chapters on sternal marrow puncture and on auto-agglutination are ably presented. However, to devote one chapter to the cytology of serous cavities and spinal fluid seems inappropriate for a book of this type. The second part of the book deals with a brief clinical and hematologic picture of the various blood diseases. Only the common forms of the hemorrhagic diseases are discussed. Rare conditions, such as hereditary pseudohemophilia (von Willebrand) and hereditary hemorrhagic thrombasthenia (Glanzman) are not clearly defined from a laboratory point of view. The recent work on hypoprothrombinemia and vitamin K and their relation to the hemorrhagic state receives no comment. Methods for studying patients with hemoglobinuria, splenomegaly, liver disease and adenopathies are presented. Emphasis is laid on splenic and hepatic puncture as well as on aspiration of lymph nodes, and the normal and abnormal appearances are well illustrated and discussed. No mention is made of such disorders as plasma cell leukemia, monocytic leukemia, reticulo-endotheliosis, granulocytopenia or the acute hemolytic anemia of Lederer. There is no bibliography, and the few references in the text refer almost exclusively to the work of French authors. A more complete index would enhance the value of the book. The colored plates are good on the whole and are supplemented by numerous black and white illustrations. Because of its epitomized

form this book will prove of little value to the hematologist or internist as a reference work, whereas the general practitioner will find some of the more complete works in the English language more practical for quick reference. The paper binding detracts materially from its usefulness.

Stage Fright and What to Do About It. By Dwight Everett Watkins, A.M., Associate Professor of Public Speaking, University of California, Berkeley, and Harrison M. Karr, Ph.D., Instructor in Public Speaking, University of California, Los Angeles. Cloth. Price, \$1.50. Pp. 110, with illustrations by Zadle Harvey. Boston: Expression Company, Publishers, 1940.

This is a carefree and rollicking little book on stage fright and what to do about it. It is based on sound physiologic principles. Stage fright is defined as a form of fear and especially fear of the unknown or fear of that for which the individual feels himself badly prepared: in other words, lack of self confidence. Stage fright with its quaking knees, trembling hands, cold sweats, internal turmoil, dry throat, unreliable voice and blank mind is likened to the primitive fear which brings about overactivity of the autonomic nervous system and the adrenal medulla. The remedies proposed are simple and sensible procedures which may be summed up in making adequate preparation for public appearances and thus building up a well founded confidence in ability to perform acceptably. Such preparations include suitable attention to appearance, dress, posture, knowledge of subject, preparation of speech and becoming accustomed to public appearances. Nevertheless it is admitted that, in spite of all precautions, some of the greatest stars of stage, screen, radio and the sports world, to say nothing of literary lions, still suffer from stage fright in spite of everything, and in some instances this grows worse as their experience increases. The book contains two conventional physiologic diagrams, a number of photographs of famous actors and on almost every page a "tongue-in-cheek" cartoon indicating the deplorable states of mind and body which characterize the victim of stage fright. This is unquestionably a useful as well as an amusing book and should be helpful not only to those who suffer from stage fright on the occasion of public appearances but also to those who suffer from bashfulness and self consciousness. One of the most virulent forms of stage fright is said to affect the young man in love.

Tomorrow's Children: Proceedings of the First Southern Conference on Tomorrow's Children Held in Atlanta, Georgia, November 9-11, 1939. Harry Bingham, Honorary Chairman. Paper. Price, 75 cents. Pp. 169. New York: Birth Control Federation of America, [n.d.].

This is a record of the Southern Conference on Tomorrow's Children under the sponsorship of the Birth Control Federation of America. It contains the program, the list of sponsors and the remarks of the speakers at the conference, together with a message from Margaret Sanger, honorary chairman of the Birth Control Federation of America. The program included papers on economic, social, population, infant mortality and maternal mortality problems in the South, with particular emphasis on the large proportion of poverty stricken and underprivileged persons, both white and black, in the South and the problem of having to educate one third of the nation's children on one sixth of the nation's available educational budgets, the difficulties involved in the share croppers' problem and the necessity for developing the Negro to take his share of the burden of citizenship. Many of the speakers advocated the abandonment of the poll tax. Almost all the conclusions emphasized the importance of what is popularly called birth control but which the speakers preferred to term "preconceptional care." Instead of the emphasis on legislation which has characterized previous birth control advocacy, it is acknowledged that local obstacles to the spread of contraceptive information are slight indeed. The new emphasis seems to be on the establishment of increasing numbers of clinics. There is much useful factual information in the report and, of course, the points of view of the speakers are of interest, representing as they do so varied a group as a practicing attorney in Tennessee, a publisher of one of Kentucky's principal newspapers, a state president of the League of Women Voters and professors of social science, sociology, public health and economics. The sponsoring committee includes the names of considerable numbers of practicing physicians in the South. The whole purpose of the conference appears to be the promotion of contraceptive practices.

Psychological Studies in Dementia Praecox. By Isabelle Kenig, Ph.D., and Winfred V. Richmond, Ph.D., Psychological Department, St. Elizabeths Hospital, Washington, D. C. Paper. Gratts, plus 50 cents postage. Pp. 211, with 25 illustrations. Ann Arbor, Michigan: Edwards Brothers, Inc., 1940.

This presents a careful and exhaustive study of the intellect in cases of schizophrenia. (The authors continue to use the old terminology and refer to "dementia praecox.") Not only are the intelligence tests carefully presented with separate chapters dealing with general intelligence, patterns of mental functioning in dementia praecox, and the concept of deterioration, but all of the relevant literature referring to this subject has been exhaustively reviewed and quoted when useful. However, the study is of little if any practical value. The authors reach the same conclusion that every progressive psychiatrist who has studied or worked with the schizophrenic has inevitably recognized and that is, to quote from the manuscript, "Despite the great weight of opinion, going back to Kraepelin's own statement that mental efficiency is always diminished to a considerable extent in dementia praecox, we have not found evidence of intellectual deterioration in our patients. . . . While, as pointed out in the case analyses, a sharp decline in the functional level of intelligence may have coincided with the onset of the psychosis, this is usually only conjectural since we rarely know the exact pre-psychotic level. Certainly, as the reexaminations indicate, there is no progressive decay of function during hospitalization, but in most of our patients a gradual recovery in the intellectual sphere corresponding with the disappearance of psychotic symptoms. It therefore seems reasonable to suppose that with complete recovery the original mental level would be regained." This quotation demonstrates what value the monograph may have for future research in schizophrenia.

Convalescent Care. Proceedings of the Conference Held Under the Auspices of the Committee on Public Health Relations of the New York Academy of Medicine, November 9 and 10, 1939. Boards. Pp. 261. New York, 1940.

In recognition of the basic deficiencies which exist in this country in the provision of adequate convalescent care, a conference was held in November 1939 at the New York Academy of Medicine under the auspices of the Committee on Public Health Relations of that academy and with the financial support of the Josiah Macy Jr. Foundation. In order to make the discussions more widely available, they are now published in book form. The first session was devoted to the basic questions of convalescent care and embodied discussions on the physiology and psychology of convalescence by O. H. Perry Pepper, the results of recent research in nutrition with particular reference to the convalescent state by H. D. Kruse, and convalescence and chronic illness by Ernst P. Boas. The subsequent sessions were devoted to convalescent care for various types of patients, psychosomatic aspects of convalescent care, the social, financial and administrative aspects of convalescent care and a summarization of the round table discussions. The actual application of many of the suggestions made should be initiated as soon as possible, since there can be no question that adequate facilities for the care of convalescents represents one of the gravest deficiencies in the medical scene today.

Dependable Modern Treatments for Burns. By Harold Joe Davis. Paper. Price, 50 cents. Pp. 9. Tulsa, Oklahoma: The Author, [n. d.].

This booklet makes an effort to provide a comprehensive but brief and understandable manual for the treatment of burns. The author is a safety engineer who has been impressed by the suffering and difficulty which confront the burned patient. He realizes also that too often there is confusion and mismanagement in the treatment. He briefly discusses ten different methods for the local treatment of burns and wisely states "The important fact to realize in the treatment of burns is that each case must be treated individually. No one treatment is always adequate for all cases or even all areas of the same burn." The author also makes several pertinent and practical statements concerning first aid procedures. However, the booklet seems to undertake the difficult task of supplying technical information to physicians as well as to laymen. The result in general is that the uninformed reader is likely to get a false sense of knowing a great deal about burns. The well informed reader, however, will be disconcerted by the misplaced emphasis and the

frequent failure to mention fundamental general principles. A good example of this weakness occurs in the paragraph on the severity and degree of burns. The author makes the ambiguous general statement "The degree of the burn is not as serious as the amount of surface skin destroyed." Obviously this is a half truth, so briefly stated as to be misleading. True the danger to life depends chiefly on the percentage of body surface burned. The author, however, neglects to mention the important fact that first degree burns heal without a scar, whereas third degree burns always produce scarring and sometimes deformity or disfigurement, even with the best of treatment. This is only one example of the numerous omissions and fundamental errors which mar the value of this otherwise meritorious booklet.

Chronic Diseases of the Abdomen: A Diagnostic System. By C. Jennings Marshall, M.S., M.D., F.R.C.S., Surgeon, Charing Cross Hospital and Victoria Hospital for Children, London. Cloth. Price, \$6. Pp. 247, with 128 illustrations. Boston: Little, Brown & Company, 1939.

Essentially a textbook on differential diagnosis of chronic conditions of the abdomen, this book deals in categorical fashion with abdominal symptoms and signs, listing and discussing each possible etiologic factor. The physical examination and the radiologic and laboratory procedures are fully discussed and should present some helpful aids to the student and practitioner attempting to solve the different problems of the chronic abdominal complaint. A large section is devoted to the analysis of abdominal pain. Those who face with trepidation the difficult differential diagnosis of right lower quadrant pain will find a clear discussion here. The author is emphatic in "laying the ghost" of chronic appendicitis. Epigastric pain is discussed as dyspeptic, nondyspeptic, organic and nonorganic gastric and extragastric. Hematemesis, ascites and jaundice together with such common problems as backache and constipation are amply discussed, particularly with a view toward dispelling some of the old and common mistakes in diagnosis. The discussion of urologic disorders in relation to intestinal complaints is particularly good. The author is rather facetious at times with regard to such problems as adhesions, lumbago and colitis. The book is well written and illustrated with many charts and x-ray plates.

Zwanglose Abhandlungen auf dem Gebiete der Frauenheilkunde. Herausgegeben von Professor Dr. Robert Schröder. Band II: Der Aneurin- (Vitamin B₁-) Haushalt in der Schwangerschaft und im Wochenbett. Von Dr. Gerhard Gaeltgens. Paper. Price, 5.40 marks. Pp. 76, with 7 illustrations. Leipzig: Georg Thieme, 1939.

This brief monograph is a preliminary report of a study of the metabolism of vitamin B₁ during pregnancy and the puerperium. About two thirds of the report is devoted to a discussion of methods. With the method of Ritsert, which was adopted, there was observed a loss of vitamin B₁ up to 25 per cent in blood, and this must be allowed for in calculating results. The amount of vitamin B₁ in the serum is from 3 to 4 micrograms per hundred centimeters of blood. The vitamin B₁ content in the serum is slightly higher in pregnant women than in normal persons. The normal urinary excretion of vitamin B₁ amounts to from 100 to 200 micrograms daily. The author believes that if the excretion in the urine is below 100 micrograms it indicates a deficiency of vitamin B₁. Pregnant women eliminate about 170 micrograms in each twenty-four hour urine specimen. After parenteral injection, 30 per cent of the dose is excreted in the urine by pregnant women. In healthy puerperal women the vitamin B₁ content of the urine before and after delivery was slightly lower than normal. The relation of the age at which pregnancy occurred was not important with regard to this B₁ content. No information is known regarding the metabolism of vitamin B₁ during the toxemias of pregnancy.

Science Front 1939. By F. Sherwood Taylor, Ph.D., M.A., B.Sc. Cloth. Price, \$2.50. Pp. 301, with 52 illustrations. New York: Macmillan Company, [n. d.].

This book for lay readers gives a quick survey of scientific achievement in 1939. It is written in spritely and popular style but contains considerable organic chemistry and many structural formulas. Included are chapters on science and plant growth, with particular reference to the growth substances and rooting substances; progress in chemotherapy with special reference to the sulfanilamide group of drugs; a chapter on sex and steroids, which contains some statements and suggestions perhaps unsuitable for promulgation to lay readers at this time; a discussion

of research in identifying the nature of living protein substances, including viruses; "the war against cancer"; insulin shock and metrazol treatment of schizophrenia, and a number of chapters of greater industrial and lesser medical interest, such as making oil from coal, progress in television, atom smashing, the quartz clocks, the polar aurora, "our view of the universe" and "the crazy liquid" helium II.

Vital Statistics of the United States 1937. Part I: Natality and Mortality Data for the United States Tabulated by Place of Occurrence with Supplemental Tables for Hawaii, Puerto Rico and the Virgin Islands. Part II: Natality and Mortality Data for the United States Tabulated by Place of Residence. Prepared under the supervision of Dr. Halbert L. Dunn, Chief Statistician for Vital Statistics. U. S. Department of Commerce, Bureau of the Census. Cloth. Price, \$2; \$1.25. Pp. 616; 186. Washington, D. C.: Supt. of Doc., Government Printing Office, 1939.

These compilations on vital statistics in the United States for 1937 contain an enormous amount of information. From them it is possible to obtain almost any desired information on deaths in the United States: their causes, racial distribution, geographic distribution and the like. Births are also analyzed in a similar manner. Comparisons with previous years make it possible to follow the trends with considerable accuracy. These annual summaries become increasingly mines of information on vital statistics in this country.

Chemistry and Medicine: Papers Presented at the Fiftieth Anniversary of the Founding of the Medical School of the University of Minnesota. Edited by Maurice B. Visscher, Professor of Physiology at the University of Minnesota, Minneapolis. Cloth. Price, \$4.50. Pp. 296, with illustrations. Minneapolis: University of Minnesota Press, 1940.

This volume is made up of a series of fourteen lectures presented by as many specialists covering individual fields of interest. The task of the editor cannot therefore have been irksome, for each of the authors has presented a complete thesis, individual in style, simple enough to be comprehensible by the nonspecialist but comprehensive and intensive enough to satisfy the specialist. This diversity of presentation makes the book entertaining and intriguing. The first section, comprising three lectures, has to do with physical chemistry in medicine and covers colloid chemistry, osmosis and renal function. The second section includes three papers on vitamins, fat in nutrition, and blood clotting. The third section covers four special aspects of immunity and chemotherapy. The last part contains four papers on the chemistry of nerve function. It would be impossible to discuss in any detail the contents of these lectures. Taken collectively they illustrate both the progress and the limitations of chemistry in medicine as well as the mutual interdependence of the two fields. When the physical sciences fail to advance, the biologic sciences stagnate. The biologic sciences, on the other hand, have often, by their demands on the physical sciences, opened up entire new fields in the latter.

Occupational Hazards and the Painter with Special Reference to New York. By Adolph B. Gersh. Paper. Pp. 99, with 19 illustrations. New York: New York District Council No. 9, B. of P. D. & P. of A., 1937.

Painters have frequently expressed concern over the unhealthy aspects of the trade. Not only are they subjected to high accident frequency and severity rates, associated mainly with scaffold and ladder work, but they are regularly exposed to such toxic agents as lead, benzene and its derivatives and homologues, turpentine, alcohol, arsenic and many other pigments, thinners, dryers and similar agents by which the chemist has altered the painting trade. Added to this is the acceleration which modern building methods impose on the painter and decorator as well as other trades with associated fatigue and joint and muscle changes which are attributed to monotonous and repetitious motion. The development of spray painting as a means of maintaining the pace has only intensified exposures to volatile and metallic poisons. This report is intended primarily for consumption by painters themselves, and certain relationships between occupation and morbidity may appear rather fanciful to medical readers. On the whole, however, the preparation of a brochure of this kind, attempting as it does to acquaint workers with the hazards of their trade, appears to be a useful piece of health education which other tradesmen should emulate. The latter half of the book is given over to a discussion of workmen's compensation administration in New York State.

Cura operatoria delle fratture del collo del femore. Di T. Putti. Cloth. Price, 60 lire. Pp. 174, with 227 illustrations. Bologna: L. Cappelli, 1940.

With his usual mastery of presentation the author discusses in the first part the treatment of fresh fractures from the anatomic, physiologic and mechanical points of view. It centers around the use of the author's lag screw, which has the advantage of holding the well adapted fragments closely imbedded against one another during the entire process of healing. Abundant x-ray and histologic slides show that the formation of callus proceeds without interference at the impacted surfaces. A large part is taken up with the technic, presented in minutest detail, reduction by traction preoperative preparations. Especially interesting is an x-ray check-up facilitated by a two tube portable machine and by a developer stationed in the operating room, with special rapid developing fluid. This allows the x-ray image to be seen in ten minutes. As a guide he uses the Vals-Lagomarsino instrument, essentially a parallelogram with one side open and one side ending in a point to be inserted through the skin into the head of the femur. The nail is made to pass through the fourth or open side along and parallel to the external part of the instrument, which is graduated. Auxiliary instruments for insertion of the screw such as perforators are used, as well as an external grill to locate the exact side of the femoral head according to the x-ray appearance. Numerous roentgenograms showing excellent results are added. The second part of the monograph deals more shortly with the old and ununited fracture, for which the Kirmisson-Lorenz osteotomy is used. Indication and technic are discussed. The book is superbly published. The illustrations are excellent. It is a fine piece of art as well as a handsome contribution to science.

Les sources de rayons ultra-violet: Leur utilisation en pratique journalière. Par Jean Saldman, fondateur de l'Institut d'actinologie. Préface d'actinologie, J. Paper. Price, 75 francs. Pp. 293, with 120 illustrations. Paris: G. Doin & Cie, 1939.

This volume, as its title indicates, is concerned chiefly with the physics of ultraviolet rays and the biologic effects produced by them. It will be of interest and value to those who are not already acquainted with the fundamental equipment and procedures used in ultraviolet therapy. Nearly a hundred pages is devoted to details concerning various types of arcs and mercury vapor lamps. The important subject of applicators for local treatments is rather briefly considered. Physical methods of measurement of intensity by radiometric devices and photoelectric tubes, as well as methods and equipment useful for the determination and measurement of biologic effects (including the author's developments along these lines) are covered adequately. The chapters on the choice of lamps, technic of irradiation and therapeutic applications of ultraviolet rays will be of particular interest to radiologists and other specialists who make use of actinotherapy. The volume can be recommended to any who desire a treatise in French on the fundamental principles of the production, measurement and use of ultraviolet rays.

Carbohydrate Metabolism. Four Papers Presented in a Symposium Held at the Meeting of the American Physiological Society at Toronto, Canada, April 29, 1939. Chairman: Professor C. H. Best. Reprinted from *Endocrinology*, Volume XXVI, No. 2, February 1940. Paper. Price, \$1. Pp. 285-351, with illustrations. Menasha, Wisconsin: George Banta Publishing Company, 1940.

This pamphlet consists of considerably amplified versions of the lectures composing the symposium on carbohydrate metabolism. A valuable addition is the extensive bibliography included in each lecture, comprising 257 references in all. This publication is therefore the most recent, authoritative summary and reference work to a subject in which the developments have been bewilderingly rapid and almost revolutionary. The divisions of the subject and the authors are as follows: Glycogen Breakdown and Synthesis in Animal Tissues, by Carl F. Cori; The Liver and Carbohydrate Metabolism, by Samuel Soskin; Adrenal Cortex and Carbohydrate Metabolism, by C. N. H. Long, B. Katzin and Edith G. Fry; The Pituitary Gland and Carbohydrate Metabolism, by F. G. Young. The fact that they are written from the point of view of physiologic research may occasion some little difficulty in the reading of certain sections for those not intimate with the field. However, there is sufficient simplification to make this publication a useful

addition to the library of every practitioner of internal medicine as well as of the research worker. Indeed, for the former it constitutes one of the few available sources of important information which cannot be expected to appear in textbooks for some time to come.

Tuberculosis and Social Conditions in England with Special Reference to Young Adults. (A Statistical Study.) By P. D'Arcy Hart, M.D., F.R.C.P., Member of the Scientific Staff, Medical Research Council, and G. Payling Wright, D.M., M.R.C.P., Sir William Dunn Professor of Pathology, Guy's Hospital Medical School, University of London, London. Foreword by The Marquessess of Titchfield, Chairman of Council of the National Association. Preface by Sir Arthur S. MacNalty, K.C.B., M.D., F.R.C.P., Chief Medical Officer of the Ministry of Health. Paper. Price, 3s. Pp. 165, with 7 illustrations. London: National Association for the Prevention of Tuberculosis, 1939.

This is a statistical study of young adults to determine the causes for the lack of decline in the incidence of tuberculosis. The marked decline in the general death rate for tuberculosis is not followed in the incidence and rates of respiratory tuberculosis among the young adult group. This report examines such social conditions as poverty, standard of living, housing, migration and occupation. The study should prove of interest to the tuberculosis specialist as well as to groups of volunteer workers concerned principally with the social aspects of this disease.

Illustrations of Bandaging and First-Aid. Compiled by Lois Oakes, S.R.N., D.N. Cloth. Price, \$2. Pp. 248, with 290 illustrations. Baltimore: William Wood & Company, 1940.

This little volume teaches the art of bandaging and first aid in fractures and hemorrhages by means of 290 pictures and accomplishes its purpose more than adequately. The work is divided into four sections: triangular bandaging, roller bandaging, first aid in hemorrhage and first aid in fractures. Each step in the application of the various bandages or splints for the different possible injuries discussed is illustrated by an excellently reproduced photograph and clarified by a concise legend. A perusal of this small volume will enable the student not only to learn bandaging but actually to master the art quickly with but little effort. The work may be highly recommended to students, nurses and instructors in first aid for use in their classes.

Teaching Wholesome Living in the Elementary School. By Alma A. Dobbs, M.A., Curriculum Division, Los Angeles City Schools, Los Angeles, California. Cloth. Price, \$2.50. Pp. 304, with illustrations. New York: A. S. Barnes & Company, 1939.

This is an excellent text and reference book intended for principals but most particularly for teachers who are concerned with the teaching of health. The book deals with the problem of making wholesome living not a single subject but "an emphasis in education upon a way of living." The author has shown that concern for health came into the school as an adjunct to the business of learning. With scientific advancement came changes in ventilation and lighting. These were found to increase school efficiency. Further observation showed that it was not a part of the child that was involved but that the whole child was to be considered and that physical growth and development must also be considered by the school and not the home alone. Part one of the book deals with the principles of growth and their application to child care. Part two deals with the curriculum and shows where protection and instruction are needed to insure wholesome living. Part three deals with the curriculum and the specific phases of pupil life activities. A rather short glossary is given and a good bibliography that will aid the teacher in developing the program.

Household Hygiene. By J. C. Gelger, M.D., Director, Department of Public Health, San Francisco, California. Paper. Pp. 96, with illustrations. San Francisco, 1940.

This booklet, prepared by the San Francisco Department of Public Health, deals with the extermination of rodents, insects, vermin and noxious weeds. The second part deals with the care of foodstuffs in the home. The third part occupies only a little over two pages and is entitled "Home Care of the Ill" but is really only a summary of the precautions against the spread of contagion. The fourth part deals with the sterilization of dishes. By reason of its brevity, accuracy, completeness and convenient size this should be a convenient pamphlet for the housewife.

Modern Diabetic Care Including Instructions in the Diet and the Use of the Old and New Insulins. By Herbert Pollack, A.B., Ph.D., M.D., Instructor in Clinical Medicine, Cornell Medical College, New York. Cloth. Price, \$2. Pp. 216. New York: Harcourt, Brace & Company, 1940.

The purpose of this manual, according to the author, is to make available a nontechnical discussion of diabetes mellitus for the diabetic patient, the physician, the dietitian and other persons interested in the disease. Nevertheless the manual contains much technical physiologic explanation of various phases of diabetes, a discussion which is unnecessary and tends to become difficult for a person with diabetes to follow. Thus there are chapters on the origin of body heat, the body and its food and insulin and food requirement. The author also goes into great detail on how patients should judge their insulin dose based on the urine test. This is a dangerous procedure to recommend to elderly diabetic patients with marked cardiovascular changes if not under the immediate supervision of a physician. There is much advice about which the physician may disagree with the author. The chapter on diets, however, is of practical value and has many fine suggestions.

Food Values in Terms of Household Measures. Prepared by Diet Therapy Section, Cincinnati Dietetic Association. Paper. Price, 10 cents. Pp. 8. Cincinnati: Council on Diabetes, Public Health Federation, 1940.

In eight pages, one of which is devoted to an index, this pamphlet gives the food values of common foods and beverages in terms of common household measures, such as cups, teaspoons, slices of bread or meat, crackers, pats of butter and ordinary size individual fruits. Such caloric tables are necessarily approximate but are nevertheless useful to the individual who cannot or will not weigh his food. The pamphlet includes no recommendations for any kind of diet. Its compact form and convenient size should make it useful to any one interested in dietary regulation or compelled to cook for or serve such a person.

Clinical Parasitology. By Charles Franklin Craig, M.D., M.A., F.A.C.S., and Ernest Carroll Faust, M.A., Ph.D., Professor of Parasitology in the Department of Tropical Medicine, Tulane University of Louisiana, New Orleans, Louisiana. Second edition. Cloth. Price, \$8.50. Pp. 772, with 244 illustrations. Philadelphia: Lea & Febiger, 1940.

The thorough revision of this authoritative textbook on parasitology must be welcomed wholeheartedly by teachers as well as by those whose professional activities require close familiarity with animal parasites and the diseases caused by them. The writing is admirably terse but covers the introductory aspects of the subject well and can be easily supplemented by consulting the important references to the literature cited at the end of the book. Both the subject and the author indexes are satisfactory.

Silicosis: Proceedings of the International Conference Held in Geneva from 29 August to 9 September 1938. International Labour Office Studies and Reports Series F (Industrial Hygiene) No. 17. Paper. Price, \$1.25; 6s. Pp. 223, with illustrations. Washington, D. C.: International Labour Office; London: P. S. King & Son, Ltd., 1940.

The discussions at the second International Conference on Silicosis failed to develop information not well known to advanced students in this field. Evidently controversial matters were purposely omitted from the agenda and from the printed conclusions. Nevertheless these papers and special reports are reliable estimates of the present status of our knowledge about causation, diagnosis and prevention of silicosis at least regarding the points on which the experts are inclined to agree. Some interesting details of new laboratory procedures are presented. These conferences are intended to bring representatives of nations just entering this field of activity down to date and to refer them to the experiences of others who have been in contact with these problems over a long period.

Diet Manual of University Hospital, University of Michigan. Revised edition. Paper. Price, \$1.25. Pp. 98. Ann Arbor, Michigan: George Wahr, Publisher, 1940.

This constitutes a collection of the diets used at the University Hospital at the University of Michigan, Ann Arbor. Reference to the desired diet list is made easy by the index. For those institutions which do not have satisfactory diet lists of their own, this would be helpful and could easily be supplemented or amended.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1930 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Clinical Pathology, Baltimore 10:361-424 (June) 1940

- Relations Between Specific Immunity, Allergy and Anaphylaxis in Tuberculosis. H. J. Corper, M. L. Cohn and A. P. Damerow, Denver.—p. 361.
- Carbohydrate Fermentation Reactions of Staphylococci. G. H. Chapman and M. H. Stiles, New York.—p. 380.
- Monocytic Leukemia of Naegeli and Schilling Types. C. H. Watkins and B. E. Hall, Rochester, Minn.—p. 387.
- Plasma Prothrombin Determination. D. H. Kaump and J. H. Greenwood, Temple, Texas.—p. 397.
- Primary Lymphosarcoma of Small Intestine: Report of Case. E. L. Benjamin and F. Christopher, Evanston, Ill.—p. 408.
- Tubercle Bacillema in Old People. A. Arnstein, London, England.—p. 414.

American Journal of Hygiene, Baltimore

32:1-44 Section A (July) 1940. Partial Index
1-18 Section B 1-26 Section C 1-32 Section D

Section A

- Family Studies in Eastern Health District: II. Accuracy of Statements of Age on Census Records. P. M. Densen, Baltimore.—p. 1.
- *Cancer in Its Relations to Climatic Conditions Acting During Childhood and Adolescence. S. Peller, C. S. Stephenson and C. G. Souder, Baltimore.—p. 39.

Section B

- Tissue Response of Normal Rabbit to Certain Lipoid Components of Typhoid Bacillus. E. W. Dennis, Beirut, Lebanon, Syria.—p. 1.

Section C

- Insectary Rearing of Anopheles Quadrimaculatus: Preliminary Report. R. L. Crowell, Wilson Dam, Ala.—p. 12.
- Effect of Environmental Temperature on Experimental Trypanosomiasis (Trypanosoma Cruzi) of Rats. M. H. Kolodny, New York.—p. 21.
- Development of Acquired Immunity in Avian Malaria: Note. R. Hegner, Baltimore.—p. 24.

Section D

- Incidence of Trichinosis in 300 Autopsies at the University Hospital, Ann Arbor, Mich. L. Catron, Ann Arbor, Mich.—p. 12.
- Experimental Studies on Validity of Species in Genus Strongyloides. D. L. Augustine, Boston.—p. 24.

Cancer and Climatic Conditions.—Peller and his co-workers point out that in the United States Army and Navy the incidence of cutaneous and lip cancer has been found to be several times higher and that of internal cancer substantially lower, than for a comparable group in the civil population of such cities as New York, Chicago, London or Vienna. For these cities one could hardly estimate a cutaneous and lip cancer ratio higher than 12 to 15 per cent of all cancer cases in the age groups below 64. In the Army, white active personnel, 34.6 ± 2 per cent and in the Navy 42 ± 3.3 per cent of all cancers originate on the surface of the body. The ratio of cutaneous and lip cancer in young persons in the Navy declined inversely to the age. The younger personnel is more exposed to outdoor life, the sun's rays, wind and other irritant factors than in later life. In the Army, white cancer patients born south of 40 degrees latitude, 45.4 ± 3.2 per cent suffered from epithelioma of the skin or lip, while the corresponding datum for cancer patients born north of this latitude was 26.1 ± 2.5 per cent. In the age group from 20 to 34 the ratio for the Southern born was 51.6 ± 5.2 per cent and for the Northern born 16.7 ± 4.4 per cent. The location of garrison was entirely unrelated to the latitude of birth or to the state of birth. The differences therefore must be determined by preservice conditions. In the group born in the South, 49.9 per cent of all its cancers originated in the skin or lip; while in the group born north of 40 degrees latitude the surface of the body accounted for only

27.4 per cent of its malignant growths. The authors conclude that the high frequency of cancer of the skin and lip and consequently the low frequency of internal cancer and the low total cancer mortality of the age groups 20 to 64 in the Army and Navy depend essentially on the exposure to dermatropic climatic conditions in childhood, adolescence and manhood. Exposure to actinic conditions during adolescence and youth seems more important in its effect on the frequency of surface cancer and the total cancer mortality than is exposure during manhood. A systematic exposure to ultraviolet rays during childhood and adolescence may become an effective measure of preventive medicine in combating cancer as a cause of death.

Annals of Internal Medicine, Lancaster, Pa.

13:2205-2414 (June) 1940

- Medical Problems Encountered in Military Service. C. C. Hillman, Washington, D. C.—p. 2205.
- Developments in Aviation Medicine. H. G. Armstrong, Dayton, Ohio.—p. 2212.
- High Atmospheric Pressures: Physiologic Effects of Increased and Decreased Pressure: Application of These Findings to Clinical Medicine. A. R. Behnke, Washington, D. C.—p. 2217.
- Epidemiology in the Army. J. S. Simmons, Boston.—p. 2229.
- Results of Use of Extract of Intestinal Mucosa in Treatment of Vasomotor Rhinitis. L. E. Prickman, H. I. Lillie, Grace M. Roth and R. G. Fleming, Rochester, Minn.—p. 2235.
- *Clinical Desensitization to Wheat by Use of Acetylcholine Derivative. E. F. Pearson, Springfield, Ill.—p. 2241.
- Clinical Application of Determination of Circulation Time. S. Baer, Philadelphia.—p. 2246.
- Cardiac Hypertrophy: Forty-Two Hearts Weighing 750 Grams or More. G. F. Strong and D. S. Munroe, Vancouver, B. C.—p. 2253.
- Felty's Syndrome: Its Several Features, Including Tissue Changes, Compared with Other Forms of Rheumatoid Arthritis. A. C. Curtis and H. M. Pollard, Ann Arbor, Mich.—p. 2265.
- Subclinical Pulmonary Tuberculosis: Presentation of Forty Cases. R. H. Stichm, Madison, Wis.—p. 2285.
- *Hemolytic Reactions Following Transfusions of Blood of Homologous Group, with Three Cases in Which Same Agglutinin Was Responsible. A. S. Wiener, Brooklyn, and H. R. Peters, Baltimore.—p. 2306.
- Cardiac Output in Congestive Heart Failure and in Organic Heart Disease. H. J. Stewart, N. F. Crane, R. F. Watson, C. H. Wheeler and J. E. Deitrick, New York.—p. 2323.

Desensitization to Wheat with Acetylcholine Derivative.—Pearson reproduced the focal reactions such as bronchial asthma, vasomotor rhinitis, eczema, urticaria and angioneurotic edema of seven patients allergic to the ingestion of wheat with acetyl-beta-methylcholine chloride (mecholy), an acetylcholine derivative. The substance was administered daily for from twenty to sixty days in increasing doses, according to the tolerance of the individual, during a controlled symptom-free period. When wheat was again added to the patients' diet the original symptoms did not recur. The patients have remained well or greatly improved for one year or longer. Previous attempts to desensitize four of the patients with wheat extract had been unsuccessful, and two previous injections of histamine did not influence the course of the illness. This method of therapy is particularly significant because it is in accord with the new knowledge of the chemical transmission of nerve impulse, a concept which will influence future study of many functional disorders. The effects of injecting this acetylcholine derivative are probably superficial and although the status quo is altered there is little change in the basic hypersensitive or cholinergic states. Fundamental alterations in the method of living, working, eating and thinking may be necessary to enable the autonomic nervous system to readjust itself. Patients whose allergic reactions tend to asthma, eczema, vasomotor rhinitis, urticaria and angioneurotic edema often present other features of cholinergia such as excessive sweating, salivation, indigestion of hyperacidity type, intestinal spasticity and dermatographism.

Hemolytic Reactions Following Transfusions of Homologous Blood.—Wiener and Peters cite three instances of hemolytic transfusion reactions belonging to "intragroup" incompatibility. Intragroup hemolytic reactions have been greatest in patients receiving repeated blood transfusions and in postpartum cases. The warning not to use the same donor for patients receiving repeated transfusions is not sufficient to exclude transfusion reactions, as the antigens responsible may occur in a considerable percentage of individuals. The authors believe that for their first two patients repeated transfusions from a single Rh (an agglutinable property of human blood recognized by immune serums for rhesus blood) donor would

have been safer. The appearance of the iso-agglutinin designated as anti-Rh in the serum of these two patients is explained as the immune response to the injection of Rh+ blood into Rh- individuals, the blood group playing no part. Following the appearance of the anti-Rh agglutinins the transfusion of Rh+ blood gave rise to hemolytic reactions. The reactions of the anti-Rh serums corresponded with those of immune rabbit serums prepared by Landsteiner and Wiener by the injection of rhesus blood. The frequency distribution of agglutinin Rh in the general population is approximately 85 per cent Rh+ and 15 per cent Rh-. Postpartum patients who have hemolytic reactions following transfusions of the proper group, though never transfused previously, should belong to the same category as the patients immunized by repeated transfusions. Some writers consider leukemia and hemolytic icterus contraindications to blood transfusion, as hemolytic reactions have been observed to follow transfusions of apparently compatible blood. The formation of immune iso-antibodies seems the most plausible explanation, because such patients are usually given many blood transfusions. No single in vitro prophylactic technic will cover every exigency of intragroup hemolytic reactions. The authors advise the following cross-matching technic in addition to the usual grouping and cross-matching tests, as it will anticipate most reactions of this sort: 1. Two drops of the patient's serum, preferably separated from the clot at refrigerator temperature, are mixed with one drop of donor's cell suspension in a small test tube. 2. In a second tube a similar mixture of the patient's serum and the patient's cells is set up. The tubes are placed in ice water for five minutes, then centrifuged while still cold and the mixtures are gently shaken. If neither tube shows a macroscopic or a microscopic reaction the donor is compatible. If both tubes show a reaction an auto-agglutinin is being dealt with and the donor probably can be used without danger. If tube 1 shows agglutination and tube 2 does not, the donor is incompatible. In any event, if time permits the serologic test should be supplemented by a biologic test. In citrate transfusions the first 50 or 100 cc. of blood can be injected very slowly and if a chill results (within the hour) the infusion should be stopped and another donor tried. This procedure would probably prevent any serious consequences, as 100 cc. of incompatible blood is hardly enough to cause a fatal reaction. In a series of fifteen hemolytic reactions with ten fatalities analyzed by Bordley, the patients receiving less than 350 cc. of blood recovered.

Annals of Surgery, Philadelphia

112:1-160 (July) 1940

- *Superior Pulmonary Sulcus "Tumor of Pancoast" in Relation to Hare's Syndrome. J. H. Morris and D. E. Harken, New York.—p. 1.
- Leiomyosarcoma of Stomach. G. W. Horsley and R. A. Berger, Richmond, Va.—p. 22.
- Total Gastrectomy for Carcinoma of Stomach. W. T. Lemmon and G. W. Paschal Jr., Philadelphia.—p. 31.
- Perforations of Gastrointestinal Tract. H. W. Meyer, New York.—p. 37.
- Surgical Anastomoses Between Biliary and Intestinal Tracts of Children: Follow-Up Studies. W. E. Ladd and R. E. Gross, Boston.—p. 51.
- Exploration of Common Bile Duct. F. Glenn, New York.—p. 64.
- Cysts of Mesentery. E. W. Peterson, New York.—p. 80.
- *Leukoplakic Vulvitis. T. D. Sparrow, Charlotte, N. C.—p. 87.
- Ureteral Transplantation. W. E. Lower, Cleveland.—p. 100.
- Leg Amputations in Diabetic Gangrene. S. S. Samuels, New York.—p. 105.
- Influence of Sutures on Operative Wounds. J. E. Bellas, Peoria, Ill.—p. 112.
- Fracture of Capitellum: Report of Case Successfully Treated by Closed Reduction. E. F. McLaughlin, Philadelphia.—p. 122.
- Suggested Improvement to Allis Method of Reduction of Posterior Dislocation of Hip. L. E. De Yoe, Paterson, N. J.—p. 127.
- Effects of Temperature on Survival of Anemic Tissue: Experimental Study. B. Brooks and G. W. Duncan, Nashville, Tenn.—p. 130.
- Function of Vertebral Veins and Their Role in Spread of Metastases. O. V. Batson, Philadelphia.—p. 138.
- *Plasma Transfusion in Treatment of Fluid Shift in Severe Burns. J. R. Elkinton, W. A. Wolff and W. E. Lee, Philadelphia.—p. 150.
- Liver Damage and Dextrose Tolerance in Severe Burns. W. A. Wolff, J. R. Elkinton and J. E. Rhoads, Philadelphia.—p. 158.

Superior Pulmonary Sulcus Tumors.—Morris and Harken report eight apical chest tumors, three of which answer the criteria of a superior pulmonary sulcus tumor as a specific entity. The series exhibits the classic picture of Horner's syn-

drome associated with an apical shadow, characteristic pain distribution and muscular atrophy. In three cases the apical tumor was shown to be either *bronchogenic* or *metastatic carcinoma* and serves to illustrate the nonspecific nature of the syndrome itself, two cases which were undoubtedly true Pancoast tumors were disqualified because of incomplete pathologic studies and the remaining three instances fulfil the criteria of the entity described as primary "*pulmonary sulcus tumor*." The authors postulate the following criteria: (1) clinical evidence of an apical tumor expressed in terms of pressure-destruction effects on adjacent nerve and osseous tissues (Hare's syndrome), (2) histologic evidence of epithelioma and (3) pathologic evidence (based on biopsy, operative and postmortem studies) which proves the extrapulmonary character of the tumor, its "lack of origin from lung, pleura, ribs or mediastinum" and its primary nature excluding all possible sources of metastatic origin. If this standard is applied, only four instances in literature conform to it. With the authors' three there is a total of seven authentic cases. Diagnosis of Pancoast tumor is conditioned on the foregoing criteria. The "Pancoast syndrome" is decidedly not a specific manifestation of the "superior pulmonary sulcus tumor" but may be initiated by various types of neoplasms as well as other pathologic conditions occurring in proximity to the pulmonary apex. The syndrome attributed to Horner was fully described by Hare thirty-one years previously and should be known as Hare's syndrome. In its early stages the condition is almost invariably treated as arthritis, neuritis, apical tuberculosis, angina pectoris or subdeltoid bursitis. Early x-ray study in obscure conditions of this type may well bring this condition within the realm of efficient surgical therapy. Roentgen therapy has proved futile as a method of treatment. Superior pulmonary sulcus tumor is characterized by (1) involvement of the cervical sympathetic chain, (2) pain referred to the shoulder, arm and hand, associated with muscular atrophy—indicative of invasion of the brachial plexus and (3) an apical tumor with destructive infiltration of contiguous ribs and vertebrae.

Leukoplakic Vulvitis.—According to Sparrow, much of the confusion surrounding leukoplakic vulvitis is due to the fact that its etiology is not known. There is considerable evidence that an ovarian dysfunction or cessation of ovarian hormone activity is an important etiologic factor. The conclusion to be drawn from the work of various observers is that normally ovarian hormone exerts some protective influence over the genital skin and that in certain women the withdrawal of the hormone results in an inflammatory process with leukoplakia and kraurosis as its principal gross manifestation and pruritus its chief symptom. Such a rationalization of the etiologic process may be logical, but it is open to criticism. There must be other factors, as yet unknown, that are important causative agents. The symptom that sends most of these patients to a physician is severe and intractable pruritus, with associated excoriations and fissures secondarily infected with burning, stinging, soreness and dyspareunia. Leukoplakic vulvitis is difficult to differentiate from other conditions associated with pruritus. The disease is of major importance because it is definitely a precancerous condition. In ninety-six cases of leukoplakic vulvitis reported by several authors 50 per cent were malignant. All forms of therapy have been applied in the treatment of leukoplakic vulvitis, but surgical intervention is perhaps the method of choice. The entire involved area must be resected. This may require the removal of the clitoris, perianal skin, the labia minora and most of the labia majora. This procedure successfully relieves the distressing symptoms and it eradicates the precancerous condition. The author cites six cases in which vulvectomy was performed. The average age of the patients was 52 years. Pruritus, pain and soreness from excoriations were their chief complaints. The first patient was operated on seven years ago, the most recent one year ago. The process continued to spread in two instances. This necessitated a second operation. An intra-epithelial epithelioma was found in one case. One patient had complete relief for almost two years, when a reddish discoloration of the skin about the vagina and

rectum appeared and an intermittent pruritus returned. A culture showed an abundant yeast growth and it has been very difficult to control the pruritus. In the only Negro woman of the series two years after operation there was complete loss of pigment of the skin about the rectum. There were no subjective symptoms. A biopsy of this area showed hyperkeratosis and absent rete pegs and fibrosis, collagenous changes and lymphocytic infiltration in the corium. The basal pigment layer stopped abruptly at the border of the lesion. The pruritus returned one year after operation in another case. There were no fissures or leukoplakic plaques. Cultures were negative for yeast or fungi. A biopsy showed, chiefly, hyalinization of the corium, atrophy of the rete and some dyskeratosis. There were no complications in the remaining case. The complications in four of the cases were treated by applications of an ointment, suggested by Foss, containing 1,800 rat units per gram of estrogen and 15 mg. of crystals. The pruritus of two patients was temporarily relieved. The ulcers in one patient disappeared in part, but in areas of tension they continued to appear at intervals.

Plasma Transfusion in Burns.—Elkinton and his associates studied five cases of moderately severe burns in the light of recent experimental and clinical observations. Their data are in accord with the view that the fluid imbalance is primarily due to an altered capillary permeability with a shift of fluid and protein into the tissues, rather than an external loss. The restoration of plasma protein by means of plasma transfusion is a rational treatment for this fluid shift. They found that the loss of plasma protein continues until the thirty-first to the fortieth hour. During this period excessive hemoconcentration may be prevented by small repeated transfusions of plasma. After the fortieth hour, when the capillaries have regained their impermeability to protein, the deficit of plasma protein may be corrected by a large plasma transfusion. The amount of protein required is calculated by a formula based on hematocrit values, plasma protein concentration and body weight. This regimen permits the restoration of plasma volume to normal without the administration of excessive amounts of protein-free fluids.

Archives of Dermatology and Syphilology, Chicago 42:1-238 (July) 1940

- Tuberculosis of Lungs in Patients with Sarcoidosis, Granuloma Annulare and Lupus Erythematosus: Comparison, Based on Roentgenologic Statistics, with Its Incidence in Patients with Proved Tuberculosis of Skin and with Different Stages of Syphilis. S. Epstein, Marshfield, Wis.—p. 1.
- Early Syphilitic Lesions Mistaken for Dermatomyofytosis. E. W. Thomas and S. M. Bluefarb, New York.—p. 11.
- Turban Tumors: Report of Case with Unusual Pathologic Findings, Including Both Epidermal and Dermal Nevi. W. Sachs, Jersey City, N. J., and P. M. Sachs, New York.—p. 15.
- Vaginal Melanosis Caused by Bismuth Therapy and Carcinoma of Cervix. K. Wiener, Milwaukee.—p. 23.
- Relapsing Early Acute Arsenical Erythema: Report of Two Cases. E. W. Thomas and O. Canizares, New York.—p. 30.
- Use of Sulfanilamide in Dermatology. R. P. Hughes, El Paso, Texas.—p. 33.
- Iodobismutol with Saligenin in Treatment of Neurosyphilis. G. V. Kulchar, C. W. Barnett and J. F. Card, San Francisco.—p. 46.
- Exfoliative Dermatitis Due to Naphthalene: Report of Eruption Resembling Mucosus Fungoides. S. J. Fanburg, Newark, N. J.—p. 53.
- Pemphigoid Eruption Associated with Hemorrhagic Nephritis Following Bismuth Therapy: Report of Case. B. Shaffer and L. H. Collins Jr., Philadelphia.—p. 59.
- Proposed Classification of Cutaneous Lipoidoses, with Description of New Local Lipoid Dermatitis: Imbibitoid Lipoidica Collagenei Degenerati Cutis. E. Urbach and W. R. Hill, Philadelphia.—p. 68.
- Sclerosing Solutions: Photographic Method for Studying Their Effects on Tissue. L. Isaak, New York.—p. 86.
- Lupus Erythematosus Profundus: Report of Example with Clinical Resemblance to Darier-Roussy Sarcoid. S. Irgang, New York.—p. 97.
- Histochemical Study of Neurodermatitis: Preliminary Report: Micro-Incineration and Spectrographic Analysis. M. F. Engman and R. C. MacCardle, St. Louis.—p. 109.
- Skin and Cancer Unit of the New York Post-Graduate Medical School and Hospital, Columbia University: Historical Review. P. E. Bechet, New York.—p. 112.
- Vesicant Chemical Warfare Agents. L. Goldman and G. E. Cullen, Cincinnati.—p. 123.
- Unusual Serologic Reactions During Pregnancy: Report of Case. L. G. Jekel, Phoenix, Ariz.—p. 137.

Archives of Internal Medicine, Chicago

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- Staphylococcic Septicemia. R. T. Sutherland, Oakland, Calif.—p. 1.
- Oil Aspiration (Lipoid) Pneumonia in Adults: Clinicopathologic Study of Forty-Seven Cases. D. G. Freiman, H. Engelberg and W. H. Merritt, New York.—p. 11.
- Bronchogenic Carcinoma, with Special Reference to Results with Roentgen Therapy. R. G. Bloch and G. Bogardus, Chicago.—p. 39.
- Primary Tumor of Inferior Vena Cava, with Clinical Features Suggestive of Chiari's Disease. P. Hallock, C. J. Watson and L. Berman, Minneapolis.—p. 50.
- *Diagnostic Significance of Determinations of Serum Lipase. T. A. Johnson and H. L. Bockus, Philadelphia.—p. 62.
- Basal Insulin Requirement in Diabetes Mellitus. Helen Martin, D. R. Drury and S. Strouse, Los Angeles.—p. 78.
- Electrocardiogram in Insulin Shock. D. Goldman, Cincinnati.—p. 93.
- Dermatomyositis and Systemic Lupus Erythematosus: I. Clinical Report of "Transitional" Cases, with Consideration of Lead as Possible Etiologic Factor. H. Keil, New York.—p. 109.
- *Effects of Roentgen Therapy on Histologic Picture and on Survival in Cases of Primary Carcinoma of Lung. P. E. Steiner, Chicago.—p. 140.
- Oscillometric Readings in Cases of Arteriosclerotic Disease of Lower Extremity: Significance and Interpretation. L. N. Atlas, Cleveland.—p. 155.
- Relation Between Multiple Peripheral Neuropathy and Cirrhosis of Liver. E. Wayburn and Catherine R. Guerard, San Francisco.—p. 161.
- Blood: Review of Recent Literature. R. Isaacs, C. C. Sturgis, F. H. Bethell and S. M. Goldhamer, Ann Arbor, Mich.—p. 173.
- Review of Literature on Pituitary Body (1938 and 1939). E. H. Ryneerson and L. R. Schweiger, Rochester, Minn.—p. 226.

Determinations of Serum Lipase.—Johnson and Bockus determined the serum lipase in 371 cases. The determinations were performed by one or the other of two persons. All values in excess of 1 cc. of a twentieth normal solution of sodium hydroxide were considered abnormal. Readings above this level were obtained from fifty cases or eighty-six separate determinations. The study confirms the reports of others that pancreatic disease shows the highest incidence of increased values for serum lipase. In nine of eleven cases of acute pancreatitis and in five of eight cases of proved cancer of the pancreas, pathologic values for lipase were obtained. Furthermore a positive test was obtained in only one of thirty-one cases of cholelithiasis without jaundice and without a previous history of jaundice, whereas in 31 per cent or nine of twenty-nine cases of cholelithiasis with jaundice or with a history of jaundice values above 1 cc. were obtained. The study does not support the view that hepatocellular injury causes an elevation of the serum lipase. Normal values were obtained in fifteen cases of so-called catarrhal jaundice, two cases of toxic or infectious hepatitis and twelve cases of hyperthyroidism. No relation between hyperbilirubinemia and the values for serum lipase was observed when simultaneous determinations of serum lipase and bilirubin were made on the same blood samples from forty-four jaundiced patients. This may give additional evidence against the theory of a hepatic causation for hyperlipasemia. High lipase values were obtained in seven of twenty-four cases of cirrhosis of the liver and in two cases of hepatic tumor. Four patients with intestinal obstruction had elevated values for serum lipase. The authors found no similar reports in the literature. If the observation is confirmed, the serum lipase test will have another important clinical application. They feel that the serum lipase determination is of considerable clinical importance and that it warrants a wider application.

Roentgen Therapy and Survival in Primary Carcinoma of Lung.—Steiner studied the microscopic effects of roentgen therapy on primary cancer of the lung and the effects of roentgen therapy on the survival period of patients with pulmonary carcinoma. The material for the study consisted of twenty-one patients with primary cancer of the lung who received roentgen therapy and as a control sixty-four patients not receiving such treatment. All were studied post mortem. In the twenty-one cases irradiation of the tumor with doses up to 5,000 roentgens did not destroy the carcinoma as judged by microscopic standards. The smallest dose which produced visible damage was 1,490 roentgens, but the carcinocidal dose was probably above 5,000 roentgens. In a metastatic carcinoma of the skull 3,800 roentgens produced marked degenerative changes, apparently destroying the tumor cells, although the microscopic examination

was not extensive enough to justify a final conclusion. Squamous cell carcinomas and adenocarcinomas of the lung were more radiosensitive than were the undifferentiated carcinomas, which, contrary to their microscopic appearance, were either highly radioresistant or highly radiorecuperative. The microscopic changes after irradiation consisted of degenerations, retrogressions or alterations in cell type and in tumor architecture. They resembled those which have been described for other types of carcinoma. Undesired effects of irradiation on tissues and organs near the primary carcinomas were not seen. Survival was not notably prolonged by irradiation. The twenty-one patients survived for an average of 11.9 months after the onset of symptoms as compared to 10.5 months in fifty-three control patients.

Archives of Neurology and Psychiatry, Chicago

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- Tumors of the Cervical Portion of the Spinal Cord. W. M. Craig and C. H. Sheldon, Rochester, Minn.—p. 1.
Acute Ascending Paralysis (Landry's Paralysis): A Clinicopathologic Study. M. W. Thorner, B. J. Alpers and J. C. Yaskin, Philadelphia.—p. 17.
Dural Headache and Innervation of the Dura Mater. W. Penfield and F. McNaughton, Montreal.—p. 43.
Bilateral Acoustic Neurofibromas: Further Clinical and Pathologic Data on Hereditary Deafness and Recklinghausen's Disease. W. J. Gardner, Cleveland, and O. Turner, New Haven, Conn.—p. 76.
Innervation of Annulus Fibrosus and Posterior Longitudinal Ligament: Fourth and Fifth Lumbar Level. P. G. Roope, Louisville, Ky.—p. 100.
Primary Melanotic Tumors of the Meninges: Resemblance to Meningiomas: Report of Two Cases in Which Operation Was Performed. B. S. Ray and N. C. Foot, New York.—p. 104.
Cystometric Studies in Cases of Neurologic Disease. II. C. Voris and H. E. Landes, Chicago.—p. 118.
Jacksonian Seizures of Reflex Origin. II. Strauss, New York.—p. 140.
Teratoma of the Pineal Body: A Clinicopathologic Report. B. W. Lichtenstein, Chicago.—p. 153.
Dermoid Tumor in Foramen Magnum, with Astereognosis and Dissociated Sensory Loss. E. A. Weinstein and I. S. Wechsler, New York.—p. 162.

Arkansas Medical Society Journal, Fort Smith

37:39-56 (July) 1940

- Heart Disease and Work. A. A. Blair, Fort Smith.—p. 39.
Carcinoma of Stomach. H. G. Hollenberg, Little Rock.—p. 40.

Endocrinology, Los Angeles

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- Differential Diagnosis of Basophilism and Allied Conditions. R. I. Dorfman, H. M. Wilson and J. P. Peters, New Haven, Conn.—p. 1.
Urinary Androgens and Uterine Bleeding. E. C. Hamblen, W. K. Cuyler and Margaret Baptist, Durham, N. C.—p. 16.
Rate of Occurrence of Hypoglycemia: Study of 21,000 Routine Fasting Blood Sugars. J. F. Hart and J. R. Lisa, New York.—p. 19.
Uterine Contractility in Functional Dysmenorrhea. L. Wilson and R. Kurzrok, New York.—p. 23.
Comparative Study of Effects of Male and Female Sex Hormones on Pituitary Gonadotropic Function in Women. N. O. Rothermich and L. M. Foltz, Columbus, Ohio.—p. 37.
Effect of Human Pregnancy Serum on Uterine Motility: Its Influence on Human Nonpregnant Uterus. J. E. Lackner and A. S. Tulsky, Chicago.—p. 41.
Subclinical Endocrinopathy as Factor in Autarecologic Susceptibility to Poliomyelitis. W. L. Aycock, Boston.—p. 49.
Comparison of International Gonadotropin Standards. F. E. D'Amour and Marie C. D'Amour, Denver.—p. 68.
Effect of High Melanophore Hormone Fractions on Tyrosine and Dopa Oxidation. G. A. Postvedt, Chicago.—p. 100.
Protection of Mice Against Potassium Poisoning by Cortico-Adrenal Hormones. R. Truszkowski and Janina Duszynska, Warsaw, Poland.—p. 117.
Hypertrophy in Pseudopregnant Uterus of Mouse, Following Mechanical Stimulation or Treatment with Vitamin E. I. Szabo, Budapest, Hungary.—p. 125.
Effect of Pituitary Preparations on Total Body Glycogen, Water, Nitrogen and Fat of Mice. A. H. Neufeld, S. M. Scoggin and G. S. Stewart, Montreal.—p. 132.

Hypoglycemia.—Hart and Lisa found that hypoglycemia (blood sugar below 80 mg.) occurred in 2,371 of 21,000 patients whose blood sugars were taken on a fasting stomach. Of these, 751 fell below 70 mg. A few blood sugar values were as low as 28 mg. without shocks. The authors conclude that low blood sugar readings are apparently not associated with any disease or group of diseases. It is possible that normal individuals may

have occasional low blood sugar values with an otherwise normal blood sugar. Either spontaneous hypoglycemia is not a common condition or routine fasting blood sugars are not reliable guides to its occurrence.

Georgia Medical Association Journal, Atlanta

29:341-386 (July) 1940

- Georgia's Medical Problems of 1940. C. W. Strickler, Atlanta.—p. 341.
Public Health Problems and Their Relation to Medical Care in Georgia. T. F. Abercrombie, Atlanta.—p. 343.
Factors Involved in Distribution of Physicians with Special Reference to Distribution in Georgia. A. A. Weinstein and C. W. Roberts, Atlanta.—p. 346.
Distribution of Hospitals. C. W. Roberts, Atlanta.—p. 354.
Cooperative Planning in Building and Operation of Community Hospitals in Georgia: Ware County Hospital. B. H. Minchew, Waycross.—p. 356.
Id.: Bulloch County Hospital. A. J. Mooney, Statesboro.—p. 359.
Id.: City-County Hospital. E. Callaway, LaGrange.—p. 360.
Id.: Stephens County Hospital. C. L. Ayers, Toccoa.—p. 362.
Suggestions for Improvement of Medical Care in Georgia. J. E. Paullin, Atlanta.—p. 364.
Prevention of Conception in Bitches by Injections of Estrone: Preliminary Report. G. L. Kelly, Augusta, and L. F. Whitney, Orange, Conn.—p. 368.
Sulfanilamide in Treatment of Tularemia: Further Studies. W. L. Curtis, College Park.—p. 369.

Illinois Medical Journal, Chicago

78:1-96 (July) 1940

- The National Health Program. S. B. Pettengill, South Bend, Ind.—p. 13.
Cancer of Tongue: Report of Forty Cases Treated with Lead Radon Tubules. F. E. Simpson, collaborators J. E. Breed and J. S. Thompson, Chicago.—p. 16.

Indiana State Medical Assn. Journal, Indianapolis

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- Management of Bright's Disease. I. H. Page, Indianapolis.—p. 337.
Education of the Public on Medical Subjects. W. D. Gatch, Indianapolis.—p. 345.
Chronic Gonorrhea. R. L. Smith, Indianapolis.—p. 346.
Relationships Between Sterols, Bile Acids, Sex Hormones and Vitamin D. C. J. Klemme, Lafayette.—p. 349.
Medical Examinations and Health Service in Schools (Summary).—p. 358.
Early Diagnosis of Spinal Cord Tumor. A. E. Walker, Chicago.—p. 360.
Continuous Drip Arsenical Therapy or Massive Dose Arsenotherapy: Case Report. J. R. Brayton and J. D. Winchbrenner, Indianapolis.—p. 368.

Johns Hopkins Hospital Bulletin, Baltimore

67:1-78 (July) 1940

- *Postoperative Venous Thrombosis and Pulmonary Embolism: Analysis of Eighty-Eight Cases. O. S. Culp, Baltimore.—p. 1.
"Lethal Dose" of Toxin in Experimental Tetanus. A. Lamont, W. M. Firor and H. B. Shumacker Jr., Baltimore.—p. 25.
Placing and Hopping Reactions in Relation to Electrically Excitable "Motor" Areas of Cerebral Cortex of Rabbit. C. M. Brooks and C. N. Woolsey, Baltimore.—p. 41.
Infra-Red Absorption Method for Quantitative Analysis of Respiratory and Other Gases. A. H. Pfund and C. L. Gemmill, Baltimore.—p. 61.

Postoperative Venous Thrombosis and Pulmonary Embolism.—Culp analyzes eighty-eight cases of pulmonary embolism encountered at the Brady Urological Institute during the last twenty years. There were thirty-two cases of fatal embolism proved at necropsy, eleven of presumptive fatal embolism in which necropsy was lacking, twenty-one of pulmonary infarcts from which the patients recovered, four infected pulmonary infarcts recognized at necropsy and twenty cases with incidental pulmonary infarcts discovered at necropsy. The majority of the thirty-two cases of proved fatal pulmonary embolism occurred in private patients more than 60 years of age, after operations performed under spinal anesthesia. Continuous intravenous infusions appeared to be a factor in producing thrombosis in the lower extremities in four instances. Marked variations from normal weight, excessive drop in blood pressure during operation, marked abdominal distention, post-operative instrumentation and organic circulatory disease, in individual cases, probably were contributing factors. In only 18.8 per cent was the thrombosis recognized clinically. Any untimely activity seemed to be capable of dislodging thrombi. Analyses of the eleven cases of presumptive fatal pulmonary

embolism revealed essentially the same contributing and the same nonessential factors as did the foregoing cases. The majority of the twenty-one nonfatal pulmonary infarcts occurred during the past ten years in private patients more than 60 years of age given spinal anesthesia. Continuous intravenous infusion was directly responsible for two cases. Marked drop in blood pressure during operation, postoperative abdominal distention, severe wound infection and circulatory disease were contributing factors in individual cases. Only 23.8 per cent of the patients presented clinical evidence of thrombosis. Some of the small emboli may have originated in the pelvis or operative area. The four patients with fatal infected pulmonary infarcts after perineal prostatectomy performed under caudal anesthesia were undernourished and more than 60 years of age. Severe wound infections were present. Associated circulatory disease, marked drop in blood pressure during operation and persistent abdominal distention may have been factors. All the patients had a clinical course simulating pneumonia. Thrombosis of the leg was diagnosed clinically in only one case and was proved at necropsy in two. The emboli in the other two cases may have come from the operative area in the pelvis. The various causes of death in the twenty cases of small pulmonary infarcts recognized at necropsy and which apparently played no part in the fatalities were pyelonephritis and uremia, pneumonia (lobar and lobular), coronary occlusion, generalized peritonitis, septicemia, heart failure and cerebral hemorrhage. Thrombosis of the lower extremity was observed clinically in five cases and demonstrated in the leg at necropsy in six, and in the pelvic veins in four; in ten the source of the embolus was not demonstrated at necropsy. The following prophylactic measures are recommended: 1. Continuous intravenous infusion should not be used unless absolutely necessary. 2. Every effort should be made to prevent peripheral venous stasis by adequate treatment of associated circulatory disease, fall in blood pressure, postoperative abdominal distention and by the elimination of unnecessary pressure on peripheral vessels due to strapping and the like. 3. Wound infections should be minimized by careful aseptic operative technic and mild bacteriostatic agents. Drainage of postoperative abscesses should be established immediately. 4. The greatest need is the recognition of thrombosis in the lower extremity. The legs should be measured on admission, before operation and before patients get out of bed. 5. Untimely activity should be avoided in the presence of thrombosis. Absolute bed rest is the most conservative and most practical treatment for thrombosis and prevention of embolism.

Journal of Aviation Medicine, St. Paul

11:57-100 (June) 1940

- Emergency Oxygen Unit for Use in Parachute Escape or in Case of Failure of Regular Oxygen Supply at High Altitude. W. M. Boothby, O. O. Benson Jr. and W. R. Lovelace, Rochester, Minn.—p. 59.
- Effect of Decreased Barometric Pressure on Electrocardiogram. O. O. Benson Jr., Rochester, Minn.—p. 67.
- Myocardial Infarction in a Young Aviator: Case Report Illustrating Value of "Routine" Electrocardiography in Examination of Pilots. A. Graybiel and R. A. McFarland, Boston.—p. 75.
- Use of Helium-Oxygen Mixtures in Aviation for Prevention of Painful Ear Symptoms. J. F. Hall Jr.—p. 81.
- Superiority of Binocular Over Monocular Vision in Depth Perception in Respect to Vertical or Horizontal Position of Object. R. Y. Walker.—p. 87.

Journal of Experimental Medicine, New York

72:1-98 (July) 1940

- Choline as a Member of Vitamin B₂ Complex. P. György and H. Goldblatt, Cleveland.—p. 1.
- Electrophoresis of Complement Fixing Antigen of Human Influenza Virus. J. Bourdillon and E. H. Lennette, New York.—p. 11.
- Occurrence of Malaria Antibodies in Human Serum Following Induced Infection with Plasmodium Knowlesi. L. T. Coggeshall, New York.—p. 21.
- Studies on Antibacterial Immunity Induced by Artificial Antigens: II. Immunity to Experimental Pneumococcal Infection with Antigens Containing Saccharides of Synthetic Origin. W. F. Goebel, New York.—p. 33.
- Encephalomyelitis of Mice: I. Characteristics and Pathogenesis of Virus. M. Theiler and S. Gard, New York.—p. 49.
- Id.: II. Method for Measurement of Virus Activity. S. Gard, New York.—p. 69.
- Id.: III. Epidemiology. M. Theiler and S. Gard, New York.—p. 79.
- Relationship of Sulfapyridine, Nicotinic Acid and Coenzymes to Growth of *Staphylococcus Aureus*. R. West and A. F. Cohn, New York.—p. 91.

Journal of Immunology, Baltimore

38:413-500 (June) 1940

- Comparative Study of Antigens for Gonococcal Complement Fixation Test. J. C. Torrey, with technical assistance of Elizabeth Montu, New York.—p. 413.
- Antitoxin Response of Partially Immunized Guinea Pigs to Infection with Tetanus Spores. B. Zuger, C. K. Greenwald and H. Gerber, New York.—p. 431.
- Polysaccharides of Blastomycosis Dermatitis. R. L. Peck, D. S. Martin and C. R. Hauser, Durham, N. C.—p. 449.
- Agglutination of Human Erythrocytes in Antipneumococcus Serums. M. Finland and E. C. Curnen, Boston.—p. 457.
- Antibodies to Strychnine. S. B. Hooker and W. C. Boyd, Boston.—p. 479.

39:1-88 (July) 1940

- Study of Immunity in Rabbits from Two to Three Years After Infection with Vaccine Virus with Attempts to Recover Active Virus. Isabel M. Morgan and P. K. Olitsky, New York.—p. 1.
- Potency of Antirabic Vaccines. R. W. G. Wyckoff and C. E. Beck, Pearl River, N. Y.—p. 17.
- Filtrable Toxic Substance in Broth Cultures of *B. Pertussis*. Mary Lee Wood, Baltimore.—p. 25.
- Experimental Immunization of Mice with Virus of Epidemic Influenza. I. Quantitative Studies on Antigenicity of Active and Inactive Virus. M. D. Eaton, New York.—p. 43.
- Id.: II. Immunity After Intranasal Inoculation of Mouse-Passage, Tissue Culture, and Ferret Passage Strains. M. D. Eaton, New York, and M. Dorthy Beck, Berkeley, Calif.—p. 57.
- Electrophoretic Analysis of Several Hyperimmune Horse Serum. J. van der Scheer, R. W. G. Wyckoff and F. H. Clarke, Pearl River, N. Y.—p. 65.
- Antigen-Antibody Reactions in Paramedium: The Aurelia Group. A. W. Bernheimer and J. A. Harrison, Philadelphia.—p. 73.
- Reticulo-Endothelial System and Immunity in Hog Cholera. H. C. H. Kernkamp, St. Paul.—p. 85.

Journal of Lab. and Clinical Medicine, St. Louis

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- *Effects of Cigaret Smoking on Metabolic Rate, Heart Rate, Oxygen Pulse and Breathing Rate. W. A. Hiestand, Helen J. Ramsey and Doris M. Hale, Lafayette, Ind.—p. 1013.
- Comparison of Effects of Large Doses of Calcium Gluconate-Idonate, Calcium Gluconate and Calcium Chloride. Elizabeth R. B. Smith, New Haven, Conn.—p. 1018.
- Fatal Renal Insufficiency Following Administration of Sulfapyridine. S. Koletsky and B. G. King, Cleveland.—p. 1021.
- Variation of Blood Pressure with Brief Voluntary Muscular Contractions. E. Jacobson, Chicago.—p. 1029.
- Treatment of Edema by Rectal Administration of Diuretics. I. J. Brightman and R. C. Batterman, New York.—p. 1038.
- *Fasting Exercise Blood Sugar Curve: Guide for Therapy in Diabetes Mellitus. W. S. Reveno, Detroit.—p. 1057.
- Observations on Sulfanilamide Solution. W. J. Siebert and F. Loose, St. Louis.—p. 1062.
- Theophylline with Isopropanolamine in Heart Disease, with Especial Reference to Congestive Failure. H. F. Robertson and F. B. Faust, Philadelphia.—p. 1066.
- Hyperglobulinemia in Granuloma Inguinale. A. E. Tausig and M. Somogyi, St. Louis.—p. 1070.
- Occurrence of Guanidine-like Substances in Blood in Essential Epilepsy. M. Murray and C. R. Hoffmann, Cincinnati.—p. 1072.
- Method for Determination of Sugar in Small Amounts (0.02 Cc.) of Blood. N. C. Klendshoj and R. S. Hulbark, Buffalo.—p. 1102.
- Comparison of Methods Used in Detection of Sick Cell Trait. L. W. Diggs and V. D. Pettit, Memphis, Tenn.—p. 1106.
- Use of Single Animal for Testing Virulence of *Corynebacterium Diphtheriae*. Margaret Beattie, Berkeley, Calif.—p. 1111.
- Rapid Method for Isolation of Kerns from Gaucher Spleen. I. A. Kaye, Brooklyn.—p. 1117.

Cigaret Smoking, Metabolism, Heart and Breathing Rate.—Hiestand and his associates studied the immediate effects of smoking on the metabolic and heart rate of thirty-nine average persons grouped as heavy smokers, light smokers and abstainers. The effects over a longer period of twenty persons were also determined. These persons were all habitual smokers. Each was in a basal condition and none had smoked since the previous day. The greatest increase in metabolic rate occurred in a confirmed woman smoker who inhaled deeply. Her metabolic rate rose 40.7 per cent immediately after smoking. Five individuals showed a decrease in metabolic rate. One individual in the second series (basal persons) showed a decrease, the rate of metabolism falling 8.5 per cent immediately after smoking and continuing to fall fifteen minutes later, after which it returned to nearly normal. An increase in metabolic rate of from 5 to 10 per cent occurred in the greatest number of cases. The average increase was 8.9 per cent. The maximal metabolic

rate of three persons was reached fifteen minutes after smoking, at thirty minutes in three and at forty-five minutes in four. The remaining ten showed the maximal metabolism immediately after smoking. Most of the persons showed a second slight rise at about forty-five minutes. The total percentages showed that there occurred simultaneously an increase in metabolic rate, an increase in heart rate, a decrease in breathing rate and a temporary decrease in oxygen pulse, followed by a rise back to and above the normal level. The average increase in metabolic rate for the eighteen men was 7.7 per cent and for the twenty-one women it was 9.9 per cent. The average increase in heart rate for the men was 5.9 per cent and for the women it was 6.4 per cent. In general there was a tendency for those who inhaled the most smoke to show the greatest physiologic changes. Profound changes also occurred among abstainers and among those who smoked only occasionally. Habitual smokers who inhaled little or no smoke tended to show only moderate effects. Cigaret smoking caused an increase in metabolic rate in 82 per cent of thirty-nine subjects, a decrease occurred in 13 per cent and no immediate effects were observed in 5 per cent. The rate of breathing decreased immediately after smoking and returned to normal in about forty-five minutes.

Fasting Exercise Blood Sugar Curve.—Reveno describes a test for gaging the severity of diabetes. It consists in making three blood sugar estimations at intervals of three hours on the fasting patient while he is ambulatory. The resulting curves fall into three groups: (1) a continuous descent from the initial reading, all levels being not far above the normal values, (2) a continuous descent from the initial reading, with all levels considerably higher than the normal values, and (3) a group of curves, none of which show a continuous descent, with at least one of the last two readings being higher than the initial value. The curves of the persons with mild diabetes that are readily controlled by diet alone or combined with a single dose of protamine zinc insulin fall into the first two groups. In the third group are the persons with severe diabetes. Of fifty persons with diabetes studied, fifteen fell into the first group, nineteen into the second and twelve into the third. Two patients with acromegaly and diabetes showed flat curves and two patients were tested during treatment with insulin. One showed a descending curve typical of mild diabetes, when, in fact, his was a severe diabetes requiring both types of insulin for control. The other, receiving a single daily dose of protamine zinc insulin, showed a flat type of curve resembling the normal. Four similar curves were encountered in the group of patients with mild diabetes on restricted diets for varying periods before testing. This experience indicates that the test is not applicable to patients under treatment, in which case it is only a measure of the adequacy of treatment. The test appears to be most useful for the new or untreated patient with diabetes. By gaging the severity of his disease, a greater degree of efficiency, with economy of time and expense, may be attained in planning therapy.

Journal of Nervous and Mental Disease, New York

92:1-140 (July) 1940

- Multiple Neuritis with Macrocytic Anemia (Both Apparently Resulting from Hypovitaminosis) in an Alcoholic Addict. L. F. Barker, Baltimore.—p. 1.
- The Question of the Existence of a Separate Sleep Center in the Brain. C. D. Camp, Ann Arbor, Mich.—p. 5.
- Reticulo-Endothelial System (RES), Its Role in Therapeutics of Dementia Praecox, and Its Relation to Blood-Cerebrospinal Fluid-Barrier (BCFB). M. K. Amdur, Coatesville, Pa., and B. W. Sollod, Augusta, Ga.—p. 8.
- Pathologic Changes in Fundus Oculi in Tuberculous Sclerosis: Clinical and Pathologic Report of Case of Tumor Arising from Optic Nerve Head with Review of Literature. M. Tarlau and H. McGrath, Central Islip, N. Y.—p. 22.
- Phenomenon of Body Rotation in Frontal Lobe Lesions. J. Gerstmann, New York.—p. 36.
- Transvestism and Other Cross-Sex Manifestations. N. S. Yawger, Philadelphia.—p. 41.
- Delayed Post-Traumatic Hemorrhage with Aphasia. R. F. Slaughter and G. Riley, Augusta, Ga.—p. 49.
- Studies on Genetic Determination of Homosexuality. T. Lang, Munich, Germany.—p. 55.
- Homosexuality and Lesbianism Treated with Metrazol: Preliminary Report. N. M. Owensby, Atlanta, Ga.—p. 65.

Journal of Nutrition, Philadelphia

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- Fasting Catabolism and Food Utilization of Calcium Deficient Rats. M. Kleiber, Muriel D. D. Boelter and D. M. Greenberg, Davis and Berkeley, Calif.—p. 517.
- Adaptation of Growing Rat to Ingestion of Constant Concentration of Fluorine in Diet. Margaret Lawrenz, H. H. Mitchell and W. A. Ruth, Urbana, Ill.—p. 531.
- Prevention of Nutritional Muscular Dystrophy in Guinea Pigs with Vitamin E. N. Shimotori, Gladys A. Emerson and H. M. Evans, Berkeley, Calif.—p. 547.
- Effect of Different Levels of Vitamin B₁ and Iron on Retention of Iron and Fat Content of Normal Young Rats. Helen Oldham and F. W. Schlutz, Chicago.—p. 569.
- Spectrochemical Study of Normal Ranges of Concentration of Certain Trace Metals in Biologic Materials. R. A. Kehoe, J. Cholak and R. V. Story, Cincinnati.—p. 579.
- Carbohydrate Values of Fruits and Vegetables. R. D. Williams, L. Wicks, H. R. Bierman and W. H. Olmsted, St. Louis.—p. 593.
- Difference Between Thiamine Deficiency in Rat and Deficiencies of Other Members of Vitamin B Complex. Mildred King Dimick, Emeryville, Calif.—p. 605.

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- Cereals and Rickets: X. Availability of Phytic Acid Phosphorus. C. H. Krieger, R. Bunkfeldt and H. Steenbock, Madison, Wis.—p. 7.
- Id.: XI. Calcium Phytate as Source of Calcium. C. H. Krieger, R. Bunkfeldt and H. Steenbock, Madison, Wis.—p. 15.
- Calcium and Phosphorus Metabolism in Rats and Dogs as Influenced by Ingestion of Mineral Oil. Margaret Cammack Smith and H. Spector, Tucson, Ariz.—p. 19.
- Hyperalbuminemia in Normal Animals Produced by Protamine Insulin. E. M. MacKay, J. W. Callaway and R. H. Barnes, La Jolla, Calif.—p. 59.
- Intestinal Absorption of Vitamin A in Normal Rat. E. L. Gray, K. Morgareidge and J. D. Cawley, Rochester, N. Y.—p. 67.
- Effect of Fluorine on Activity of Vitamin D in Rickets Rats. K. Morgareidge and S. B. Finn, Rochester, N. Y.—p. 75.

Journal of Urology, Baltimore

44:1-124 (July) 1940. Partial Index

- Indications and Technic for Simplified Method of Nephrostomy. F. N. Kimball, New York.—p. 1.
- Renal Calculi: Study of Papillary Calcification. E. C. Rosenow Jr., Rochester, Minn.—p. 19.
- Renal Calcification in Adults. W. A. D. Anderson, Memphis, Tenn.—p. 29.
- Severe Surgical Injury to Both Ureters with Subsequent Restoration of Function. F. L. Senger and S. Johnson, Brooklyn.—p. 35.
- Cutaneous Ureterostomy for Relief of Intractable Bladder Tuberculosis. E. L. Keyes, Tuxedo, N. Y.—p. 40.
- Tuberculosis of Testicle. G. J. Thomas, Minneapolis; T. L. Stebbins and F. J. Rigos, Oak Terrace, Minn.—p. 67.
- Testicular Degeneration Following Interruption of Sympathetic Pathways. A. B. King and O. R. Langworthy, Baltimore.—p. 74.
- *Sarcoma of Prostate. A. R. Stevens and B. S. Barringer, New York.—p. 83.
- Sulfathiazole Treatment of Urinary Tract Infections. O. S. Culp, Baltimore.—p. 116.

Sarcoma of Prostate.—Stevens and Barringer report sixteen cases of sarcoma of the prostate and three of anaplastic carcinoma. They suggest an irradiation procedure which they believe may lead to the control of some of these cases and to a greater extension of life in many more. Only a rare case of sarcoma of the prostate is controlled for more than a few years by present methods. Prostatic abscess, prostatic carcinoma, bladder tumor, extravascular tumor, cyst of the prostate and massive stone of the prostate may be mistaken for prostatic sarcoma. Roentgen treatment as a diagnostic test should not be disregarded. Many of these tumors are highly radiosensitive. High voltage roentgen therapy, 300 roentgens daily to four ports until a total dosage per port of perhaps 1,200 roentgens is given, may reveal in three or four weeks a marked recession of the growth. This information is not as reliable as that obtained from aspiration biopsy but is of great value. Clinically there are two distinct groups of these tumors. In one group are patients subjected to prostatectomy under a diagnosis of benign hypertrophy and known to have a malignant tumor only after microscopic examination of the tissue. These cases are usually and fortunately of low malignant grade, generally radio-insensitive, and, while a prostatectomy may not be the operation of choice, it is unavoidable. Such cases are either watched carefully for recurrence or are immediately treated by external and interstitial irradiation. The other group of patients, in whom the presence of a tumor of unusual malignant grade is recog-

nized, presents a different problem. Operation of any sort seems to be consistently fatal, even if followed by radiation therapy. A modified form of irradiation for these patients, similar to that which has been applied to control Wilms tumors of the kidney, is suggested. The theory behind the treatment is that a prolonged external irradiation produces a slow sclerosis of blood vessels which is apparently necessary to control the growth. While the blood supply of the prostate is not as great as that of the kidney, it is copious enough to warrant this type of therapy. In a sarcoma of the prostate the authors would attempt to make an aspiration diagnosis and immediately put the patient on high voltage roentgen therapy even if no microscopic diagnosis was made. They would give the patient 200 roentgens daily at 70 cm. distance to four or five ports and continue this for six or more months. This requires patience and persistence, but in view of the paucity and questionable nature of the reported cures it seems worth a trial. If retention by catheterization is impossible, a semipermanent suprapubic tube should be inserted. The authors conclude that their experience and literature demonstrate the superior value of irradiation over surgical procedures.

Kentucky Medical Journal, Bowling Green

38:279-324 (July) 1940

- Cholangiography. M. Thompson and J. Bell, Louisville.—p. 280.
Sinus Disease in Relation to Systemic Disease. J. D. Heitger, Louisville.—p. 285.
Dupuytren's Contracture. J. D. Hancock, Louisville.—p. 290.
Fractured Hip. E. S. Allen, Louisville.—p. 293.
Quinidine in Treatment of Heart Disease. M. M. Weiss, Louisville.—p. 303.
Some Important U. S. P. and N. F. Preparations. W. Higgins, Hopkinsville.—p. 308.
Obesity and Genital Underdevelopment in Prepuberal Boys. J. R. Hendon, Louisville.—p. 310.
Psychosomatic Relationships. W. B. Curtis, Louisville.—p. 313.

Laryngoscope, St. Louis

50:503-584 (June) 1940

- Résumé of Literature on Neck Infections for 1939. A. M. Alden, St. Louis.—p. 503.
Atrophic Rhinitis in Plastic Surgery. M. M. Kopp, New York.—p. 510.
Syphilitic Nose. A. A. Cinelli, New York.—p. 520.
Nasal Biopsy: Critique of Current Methods. N. D. Fabricant, Chicago.—p. 527.
Further Advances in Technic of Laryngeal Photography. J. J. Pressman and A. Hinman, Los Angeles.—p. 535.
(a) Primary Carcinoma of Middle Ear and Mastoid: (b) Endaural Approach to Mastoid. C. H. Smith, New York.—p. 547.
Papillary Reactions in Affections of Ear. J. Berberich, London, England.—p. 555.
Atypical Mastoiditis, Adult Type: Case Reports. J. D. Singleton, Dallas, Texas.—p. 559.
Case of "Sir" Michael—A "Radical Mastoidectomy" with Unusual Features. L. R. Effner, Toledo, Ohio.—p. 567.
Gold Prosthesis in Drum Defects. S. L. Ruskin, New York.—p. 573.

Maine Medical Association Journal, Portland

31:191-212 (July) 1940

- Diseases and Treatment of Veins of Lower Extremity. R. R. Linton, Boston.—p. 193.
Subacute Bacterial Endocarditis Treated with Heparin and Sulfapyridine: Case. D. Weeks, Portland.—p. 200.
Calcification of Iliolumbar Ligament. H. G. Hadley, Washington, D. C.—p. 202.

Michigan State Medical Society Journal, Lansing

39:453-532 (July) 1940

- Gastric and Duodenal Ulcer: Some Observations on Management. I. S. Ravdin, Philadelphia.—p. 467.
Intestinal and Hepatic Disorders in Congestive Circulatory Failure. J. C. Meakins, Montreal.—p. 474.
Sarcoma versus Stromatous Endometriosis of Uterus. J. R. Goodall, Montreal.—p. 480.
Potassium Chloride in Allergy: Report of 117 Cases. F. Smith and W. H. Steffens, Grand Rapids.—p. 485.
*Migraine Treatment with Chondroitin. G. E. Drewyer, Flint.—p. 486.
Clinical Roentgenology of Gallbladder. C. E. Weaver, Detroit.—p. 487.
Rectal Infusion. R. E. Reagan and Velma Menchinger, Benton Harbor.—p. 490.
Unusual Tumor of Vulva. C. A. Domzalski, Detroit.—p. 492.

Chondroitin for Migraine.—Drewyer used chondroitin in capsules containing 0.6 Gm., four capsules three times a day after meals, as recommended by Crandall, in the treatment of sixteen cases of migraine and fourteen of idiopathic headache.

The patients have been under treatment for from six months to three years and 67 per cent of them have been completely relieved of their symptoms, 13 per cent have been partially relieved and 20 per cent experienced no benefit. Among the failures those with true migraine were often relieved by ergotamine tartrate intramuscularly. The author believes chondroitin to be a valuable adjunct in the prevention of these types of headache.

Military Surgeon, Washington, D. C.

87:1-88 (July) 1940

- Short Synopsis of Military Surgery. G. de Tarnowsky.—p. 1.
Use of Station Hospital for Military and Clinical Training of the R. O. T. C. T. L. Ferenbaugh, W. C. Dreibelbies and H. A. Kemp.—p. 13.
Air Transportation of the Sick and Wounded a Medical Problem. W. Tönns.—p. 22.
Management of Fractures of Maxilla. J. B. Davidson and A. M. Brown.—p. 26.
Problems of Procedure in Surgical and Nonsurgical Treatment of Renal and Ureteral Calculi: Few Case Reports. J. H. Plant.—p. 42.
Follicular Odontomas. J. L. Bernier.—p. 45.
Fungus Infection of Feet Treated by Copper Iontophoresis. S. Hoehcstetter.—p. 50.
First Aid and Transportation of Vertebral Injuries. H. Hansen.—p. 53.
Compound Fractures of Thigh and Leg in Military and Civil Practice. A. Steindler.—p. 54.
Standing Operating Procedure for a Medical Battalion, Peace Strength. P. E. Zuver.—p. 64.
Surgeon Thomas A. McParlin—Letterman's Successor with the Army of the Potomac. J. M. Phalen.—p. 68.

Minnesota Medicine, St. Paul

23:459-532 (July) 1940

- Modern Trends. B. S. Adams, Hibbing.—p. 459.
Medical Symbolism in Mythology of Ancient Greece. W. S. Lemon, Rochester.—p. 462.
*Tuberculosis Case Finding Among American College Students. C. E. Lyght, Northfield.—p. 465.
*Early Diagnosis Campaign—Rural Hennepin County Plan. E. S. Mariette, Oak Terrace.—p. 471.

Tuberculosis Among College Students.—According to Lyght, Myers and his co-workers established a student chest clinic at the University of Minnesota twenty years ago. Today there are nearly 200 institutions of higher education in the United States providing some degree of tuberculosis case finding among their students. A report for 1938-1939 lists 282 replies to a questionnaire from colleges and universities, of which 165 reported some form of tuberculosis program in operation. The institutions ranged from small schools with an enrollment below 500 through large institutions enrolling from 4,000 to 16,000 students. All sections of the country were represented. Of these 143 test with tuberculin, while twenty-two resort to x-ray study as the first step in their procedure. The difficulties which have led to adoption of the latter method include real or fancied student distaste for the tuberculin test, a high incidence of positive reactors, time, energy and expense demanded by careful tuberculin testing. Nonetheless prior tuberculin testing is advocated, since it provides the only sure way of discovering more than 90 per cent of the presently infected individuals. Furthermore, the retesting of negative reactors, preferably annually, gives definite indication of tuberculo-protein allergy shortly after its development or its resumption by those few who may have achieved anergy for a time, only to revert to positivity through reactivation of once inactive, apparently well calcified, lesions. The benefits of tuberculin testing so far outweigh the admitted bother and the negligible expense that the method should be preserved intact, its use spread rather than abandoned for what may be a questionable short cut. Figures for 1937-1938 and for 1938-1939 are almost identical and indicate that tuberculosis can be found early by any one willing to look for it. Last year in the 165 colleges supporting case finding, enrolment totaled 348,713 students. Determined search for tuberculosis disclosed 241 clinically active cases, 368 diagnosed as apparently arrested, or 609 newly found cases. Of these, 151 students withdrew from college because of their lesions. There were an additional 320 old cases not included in the foregoing back in college under supervision. In comparison,

of 129,851 students enrolled in 117 colleges without case finding programs there were four cases diagnosed as clinically active, fifteen as apparently arrested, and ten formerly diagnosed back in school. Only four students left college because of tuberculosis. In the first group of colleges the protected, investigated student population was less than three times the volume of that in the second group, yet its active cases were sixty times as numerous and those advised to leave college for their own good and for the safety of others were thirty-eight times as many. Physicians in general and tuberculosis specialists in particular should cooperate with the student health doctors who are attempting to popularize a campaign built around the words "early" and "preventive." Every far advanced case and every fatality was once a minimal case.

Early Diagnosis of Tuberculosis.—According to Mariette, in Hennepin County the search for the unknown case of tuberculosis is a cooperative program. It is participated in by the Hennepin County Tuberculosis Association, the Glen Lake Sanatorium and the private physician who reports his cases to the sanatorium. This cooperative survey, begun in 1925, includes the school child and his adult contact both in the school and in the home and the contacts of the new cases of tuberculosis reported to the health department. The work has two phases: educational or publicity directed by the Hennepin County Tuberculosis Association and medical directed by the sanatorium but including the private physician. The Tuberculosis Association in its educational work gets in touch with the schools and sells the idea of a school survey to the parents and the school employees. On the effectiveness of this publicity, securing signed cards of consent for the tuberculin cutaneous test, the success of the survey depends as far as it pertains to the number of children, school employees and adult contacts studied. In 1940 about 70,000 people in the United States will die from tuberculosis and about 500,000 will be made ill by it. The task of case finding is tremendous.

Missouri State Medical Assn. Journal, St. Louis

37:267-332 (July) 1940

- *Single Trauma as Etiologic Factor in Carcinoma. W. E. Leighton and E. C. Schmidtknecht, St. Louis.—p. 267.
- Blood Picture in Vincent's Infections. D. G. Stine, Columbia.—p. 277.
- Epidemiology of Pneumonia: Distribution of Types of Pneumococci in Specimens from Four Different Groups of Individuals. S. E. Sulkin, St. Louis.—p. 280.
- Medical Aspect of Toxic Goiter. E. J. Nienstedt, Sikeston.—p. 284.
- Peptic Ulcer: Recent Considerations in Diagnosis and Treatment. B. Kenamore, St. Louis.—p. 285.
- Preoperative Management of the Child Patient. W. C. Schaeffer, Kansas City.—p. 287.
- Convulsions. I. Levy, St. Louis.—p. 289.

Single Trauma as Etiologic Factor in Carcinoma.

Leighton and Schmidtknecht review the histories of cancer cases at the Barnard Free Skin and Cancer Hospital with regard to the incidence of a single trauma as the etiologic cause. Sarcomas and internal and mammary cancers were excluded and only cases of external carcinomas were selected, as this permitted the patient to know whether there was a tumor or any visible defect prior to the injury. Seventy-nine case histories of definitely proved carcinoma with antecedent single injury were found. The statements in these histories should have as much value as any other etiologic factor, as there was no medicolegal or compensation question. The single injuries reported by the patients were blows from wood, hammers or falls, razor cuts (circumcision), burns (from hot metals, cigarettes or acids), laceration, excoriation and crushing injuries. Seventy-three of the patients were between 40 and 80 years of age when the injuries were sustained. Only five patients gave a history of familial carcinoma. Thirty-one of the cancers appeared in from one to ten months after injury, and forty-two others in less than three years. In the majority the original lesion failed to heal. There were seven carcinomas of the penis, and one of these occurred on the shaft, an unheard of site. The authors point to the fact that, while no one believes that trauma in itself is the cause of cancer, the trauma apparently sets off something, and from their experience it is the exciting or instigating cause in certain cases.

Nebraska State Medical Journal, Lincoln

25:245-284 (July) 1940

- Acute Abdominal Surgical Conditions of Children. C. F. Andrews, Lincoln.—p. 245.
- Nonprofit Group Hospital Service Plans. I. H. Lockwood, Kansas City, Mo.—p. 249.
- Nervous Disorders of Advanced Age Group. G. A. Young, Omaha.—p. 252.
- Outline of Examination for Patient with Low Back Pain. J. E. M. Thomson, Lincoln.—p. 256.
- Low Back Pain Due to Herniation of Intervertebral Disk. F. L. Simonds, Omaha.—p. 260.
- Bleeding Duodenal Ulcer Complicated by Myocardial Infarction. C. W. McLaughlin, C. P. Baker and J. C. Sharpe, Omaha.—p. 266.
- Treatment of Painful Breasts. W. F. Bowers, Omaha.—p. 269.

New England Journal of Medicine, Boston

223:1-44 (July 4) 1940

- Hemangioma of Uterus Treated with Roentgen Rays: Report of Case. A. Y. Kevorkian, Brookline, Mass.—p. 1.
- Prevention and Control of Tuberculosis in Massachusetts. F. T. Lord, Boston.—p. 4.
- Diabetes Mellitus. E. P. Joslin, Boston.—p. 22.

New Jersey Medical Society Journal, Trenton

37:347-394 (July) 1940

- Drainage of Chronic Foci of Infection in Mouth and Throat: Preliminary Report. I. R. Beir, Atlantic City.—p. 349.
- What Is Needed Now. A. T. Vanderbilt, Newark.—p. 356.
- Vascular Pathology of Digestive Tract. S. Z. Hawkes, Newark.—p. 362.
- Fellowship in the Academy of Medicine of Northern New Jersey. J. B. Davidson, Newark.—p. 367.

New York State Journal of Medicine, New York

40:983-1060 (July 1) 1940

- *Vitamin K Deficiency in Absence of Jaundice. T. T. Mackie, New York.—p. 987.
- Closed versus Open Reduction of Recent Fractures. W. D. Ludlum Jr. and R. B. Elias, New York.—p. 996.
- Classification of Morbid Conditions Giving Rise to Paroxysmal Cardiac Pain: Diagnosis and Therapy. H. L. Rakov, Kingston.—p. 1006.
- Hematuria in Office Practice: Critical Study Based on Series of 2,446 Cases. A. Ravich, Brooklyn.—p. 1014.
- Allergic Sinusitis. M. C. Harris, New York.—p. 1020.
- Foreign Bodies Swallowed by Children. C. J. Delaney, New York.—p. 1024.
- Milk-Borne Bacillary Dysentery: Report of Outbreak in New York State. J. J. Quinlivan, Saranac Lake.—p. 1027.

Vitamin K Deficiency in Absence of Jaundice.—Mackie points out that the deficiency of prothrombin in the blood of jaundiced individuals and the demonstration of the role of vitamin K in the maintenance of normal prothrombin values promptly led to successful clinical trial with vitamin K in cases of obstructive jaundice. However, prothrombin deficiency has been encountered in other conditions. The author investigated the vitamin K status of 277 miscellaneous medical and surgical cases by determining the prothrombin time of the plasma according to the method of Quick. He observed elevated prothrombin time in fifty-seven cases in which there was neither jaundice nor other evidence of hepatic disease. Six of these, three of them complicated by severe hemorrhage, are presented in detail. There was one case of Banti syndrome, one of tropical sprue complicated by chronic intestinal obstruction, two of ulcerative colitis and two of regional enteritis. Physical examinations and icterus indexes did not demonstrate advanced hepatic disease. Precipitating factors appear to have been defective diet, defective absorption from the intestine and major surgical procedures. Vitamin K is known to be present in many different foodstuffs and is said to be produced in the intestinal tract by bacterial action. It is a fat-soluble substance which requires the presence of bile salts for absorption. The formation of prothrombin necessitates not only vitamin K but a functionally active liver. It is apparent that vitamin K deficiency may arise in several different ways. Exclusion of bile from the intestine by obstructive jaundice or external biliary fistula may prevent absorption. Insufficient secretion of bile acids will act similarly. Disease or altered physiology of the intestine may produce this avitaminosis by impairing the absorptive function even in the presence of adequate sources and a functionally active liver. Defective diet alone may produce this type of deficiency despite the theoretical source of the vitamin from intestinal bacterial action. Vitamin K deficiency may occur in a variety of conditions unaccompanied by jaundice or evidence of serious liver disease. The

cases studied emphasize the clinical importance of this deficiency and illustrate certain of the potential mechanisms that may produce avitaminosis K. Correction of a defective diet alone may suffice to restore an elevated prothrombin time to normal. In certain cases without jaundice, vitamin K alone or dehydrocholic acid alone will suffice; in others bile acids and vitamin K are required. The response of certain cases to the exhibition of dehydrocholic acid alone suggests a qualitative or quantitative defect of bile secretion.

40:1061-1130 (July 15) 1940

- *Medical Problems of Diving and Submarines. L. W. Johnson, Washington, D. C.—p. 1065.
General Medical Problems in Aviation. H. G. Armstrong, Toronto.—p. 1075.
Noise in Relation to Hearing and Efficiency. A. R. Behnke Jr., Washington, D. C.—p. 1080.
Epidemic Hazards in War. F. G. Boudreau, New York.—p. 1089.
Infections Following Trauma. F. S. Wetherell, Syracuse.—p. 1094.
Trauma and Its Relationship to Heart Disease. L. F. Bishop Jr., New York.—p. 1099.
Medical Examination and the Prospective Worker. J. C. Zillhardt, Binghamton.—p. 1104.
Accidents in Children. M. Zimmerman and S. A. Cohen, New York.—p. 1111.
Some Aspects of Chemotherapy of Pneumonia. M. Finland, F. C. Lowell and E. Strauss, Boston.—p. 1115.

Submarine and Diving Medicine.—Johnson discusses the dangers to which submarine crews and professional deep-sea divers are exposed in the discharge of their duties and the part of medicine and mechanical ingenuity in meeting and neutralizing these dangers. Most of the problems are in the field of physiology, especially of respiration and interchange of gases under pressure in the tissues of the body. Submarine personnel is rigidly selected and exactly trained. Oxygen control embraces the three phases of oxygen supply, carbon dioxide elimination and wet bulb temperature regulation. Oxygen needs in submarine work, anoxemia and its devastating effects, especially on the brain and spinal cord tissues, carbon dioxide control at a 3 per cent level, the efficiency of modern carbon dioxide absorbents, air conditioning with a wet bulb temperature at 75 F. or lower and so on are intimately presented. The author describes the construction and operation of two devices designed to save human life in sunken submarines, namely the "lung" and the rescue chamber. The four principal hazards to which professional divers are subject, namely asphyxia, blowing up, falling or being squeezed and caisson disease (or bends) are vividly set forth as well as the treatment given in the compression chamber. It is now generally accepted and recently has been roentgenologically confirmed that bends are due to gas saturation (nitrogen, also helium) in the tissues. Pure oxygen is now used in the prevention and treatment of bends. Decompression tables worked out for different depths and times of exposure have almost completely eliminated caisson or bend danger. Helium mixed with oxygen in the proportion of 4 to 1 has been found to have definite advantages over air as a respiratory gas for diving.

North Carolina Medical Journal, Winston-Salem

1:281-330 (June) 1940

- *Use of Plasma as Substitute for Whole Blood. J. Elliott, W. L. Tatum and N. Nesset, Salisbury.—p. 283.
Personality and Psychosis. A. P. Noyes, Norristown, Pa.—p. 290.
Macrocytic Anemia in Extremis: Case Report. F. B. Marsh, Salisbury.—p. 295.
Albuminous Expectoration: Report of Case. E. A. MacMillan, Winston-Salem.—p. 299.
Diagnosis and Management of Asymptomatic Uncomplicated Syphilitic Aortitis. G. M. Leiby, Raleigh; J. L. Callaway, Durham, and W. L. Fleming, Chapel Hill.—p. 301.
Twins Pregnant with Rupture of Uterus Following Spontaneous Delivery of First Fetus: Report of Case. R. T. Sinclair Jr. and W. E. Miller, Whiteville.—p. 306.
Review of Data on 600 Women Tested for Patency of Fallopian Tubes. R. T. Ferguson, Charlotte.—p. 309.
Marriage Counseling for Physicians. F. H. Richardson, Black Mountain.—p. 312.
Sciatic Pain and Hyperglycemic Response to Glucose Tolerance Test. C. T. Smith, Rocky Mount.—p. 315.

Plasma as Substitute for Whole Blood.—Elliott and his associates point out that the indications for blood transfusion suggest that the plasma fraction is of more importance than the cellular fraction. In shock, with and without hemorrhage, the

ready availability of blood plasma with no loss of time for cross matching has made it life saving in many instances. Blood plasma is probably even more satisfactory than whole blood because its diluent, dextrose and saline solution, is also capable of increasing blood volume whereas erythrocytes are not. Prepared plasma can be stored in any institution or physician's office in readiness for any emergency. It can be carried into the home and infused as readily as dextrose and saline solution. The loss of plasma protein from the circulation that follows extensive burns accounts for the decreased blood volume, the hemoconcentration and the circulatory failure. Transfusion of whole blood is beneficial and is a recognized therapeutic measure. However, the reasons for giving burned patients transfusions suggest that the beneficial effect is from an increase in the blood volume. The erythrocytes are above normal and there is no indication for increasing them. Plasma alone should be and in the authors' experience has been effective. If plasma is available, transfusion of whole blood may even be contraindicated. In severe infections complement in transfused blood is of utmost importance, but the protein of the blood plasma is more important. It not only maintains normal plasma protein, if given early and in adequate quantities, but also furnishes protein for the body's metabolic needs. In many of these cases the erythrocytes are normal. It is the authors' practice to infuse plasma until the erythrocyte count drops to about 4,000,000 and then to raise the blood count to normal with whole blood, resuming the use of plasma when this is accomplished. The need of the sick patient for protein, especially in an extended illness, is great. Maintenance of plasma proteins is much less difficult than their restoration; therefore plasma infusions should be started before the need is apparent. When protein intake is inadequate from starvation or other causes, with resulting hypoproteinemic edema, treatment must naturally be directed toward increasing the plasma proteins. Increased oral protein intake is the most satisfactory, but when this method is inadequate infusion of plasma is necessary. Dramatic clearing of edema is often observed if adequate plasma is administered. However, if any anuria exists a sudden increase of plasma proteins above the edema level may result in the withdrawal of water from the tissues to the blood stream at a rate faster than the kidneys can remove it from the circulation. When convalescent plasma is required and the donor and recipient belong to different blood groups, the erythrocytes can be removed and the incompatible plasma infused with safety.

Ohio State Medical Journal, Columbus

36:713-816 (July) 1940

- Preventive Medicine, Public and Personal. H. Emerson, New York.—p. 729.
Efficacy of Sauer's Vaccine: Comparison of Incidence of Preschool Pertussis in a City with High and in One with Low Percentage of Immunization. J. A. Garvin, Cleveland.—p. 738.
Chronic Nonspecific Urethritis in the Female. F. C. Hendrickson, Canton.—p. 740.
Reducing Appetite in Treating Obesity: Rational Use for Propadrine Hydrochloride. L. S. Hirsch, Cincinnati.—p. 742.
Scarlet Fever Immunization: Review of Scarlet Fever Immunization Performed in St. John's Hospital School of Nursing During the Past Five Years. E. J. Stefanie, Cleveland.—p. 744.
Twelve Years of Malaria Treatment in Dementia Paralytica. C. L. Langsam, Macedonia.—p. 749.
The Obstetric Pelvis: Is Manual Examination Adequate for Scientific Conduct of Labor? Comments on Roentgen Rays and Manual Measurements. J. P. Gardiner, Toledo.—p. 752.
Ocular Complications of Diabetes Mellitus. E. R. Thomas, Dayton.—p. 756.
Diarrhea and Vomiting in Children. M. L. Cooper, Cincinnati.—p. 759.
Adequate Diets at Low Cost. Martha Koelne, Columbus.—p. 762.
Dog Bites: Case Record Presenting Clinical Problems. H. L. Reinhardt, Columbus.—p. 770.

Philippine Medical Association Journal, Manila

20:255-316 (May) 1940

- Intestinal Intussusception: Importance of Its Early Diagnosis. M. B. Abad, Manila.—p. 255.
Differential Diagnosis of Leukemia (I). E. Strancky and F. N. Quintos, Manila.—p. 267.
Acute Diverticulitis Simulating Acute Appendicitis: Meckel's Diverticulum: Report of Cases. J. Y. Fores and M. C. Magboo, Manila.—p. 273.
Approach to Rational Therapy of Hypertensive Arterial Disease. R. V. Guiang, Baguio, Pangasinan.—p. 277.

Public Health Reports, Washington, D. C.**55:1057-1104 (June 14) 1940**

- *Immunity to Lansing Strain of Poliomyelitis as Revealed by Protection Test in White Mice. V. H. Haas and C. Armstrong.—p. 1061.
Studies on Trichinosis: XIV. Survey of Municipal Garbage Disposal Methods as Related to Spread of Trichinosis. W. H. Wright.—p. 1069.
Pathologic Histology of Experimental Virus Influenza in Ferrets. T. L. Perrin and J. W. Oliphant.—p. 1077.

55:1105-1142 (June 21) 1940

- Occupational Leukoderma. L. Schwartz, E. A. Oliver and L. H. Warren.—p. 1111.

55:1143-1192 (June 28) 1940

- Plague in the United States. B. C. Hampton.—p. 1143.
Clothing for Protection Against Occupational Skin Irritants. L. Schwartz, L. H. Warren and F. H. Goldman.—p. 1158.
Disabling Morbidity Among Male and Female Employees in Mail Order Stores, 1930-1934, Inclusive. H. P. Brinton and Elizabeth S. Frasier.—p. 1163.

Immunity to Poliomyelitis and Mouse Protection Test.

—According to Haas and Armstrong, the results of the mouse protection test, using eighty-three human serums and the Lansing strain of poliomyelitis virus, show that serum antibodies capable of neutralizing the Lansing strain of poliomyelitis virus are widely prevalent, especially among older individuals. The results secured with mice appear to be more trustworthy than those usually secured with monkeys, as mice are more uniformly susceptible. The results agree with those secured with human serums in monkeys. These considerations should render it possible to follow serum immunity in population groups from different localities and from infancy to adulthood and thus probably clarify many epidemiologic questions awaiting solution. More protection was shown by serums of persons living in orphanages than by those of the same age group living in private urban dwellings.

Radiology, Syracuse, N. Y.**35:1-130 (July) 1940**

- Opaque Survey of Nasal Sinuses: Method for Diagnosis of Anatomic State of Sinuses and of Functional Capability of Their Membrane. R. Schillinger, New York.—p. 1.
Factors Influencing Prognosis in Treatment of Carcinoma of Cervix. Rieva Rosh, New York.—p. 17.
Radiation of Cancer of Cervix. F. W. O'Brien, Boston.—p. 23.
Treatment of Carcinoma of Corpus Uteri: Description of New Hysterostat. M. Friedman, New York.—p. 28.
Roentgenologic Contribution to Physiology and Anatomy of Intestinal Motility: Study of Over 100 Normal Individuals. G. G. Kopstein, Chicago.—p. 39.
New Organic Thorium Compound for X-Ray Diagnostic Purposes: Preliminary Report. F. R. Greenbaum and A. F. Peters, Philadelphia.—p. 45.
Nuclear Physics and Therapy: Preliminary Report on New Method for Treatment of Leukemia and Polycythemia. J. H. Lawrence, Berkeley, Calif.—p. 51.
Primary Carcinoma of Lung: Report of Two Cases. C. H. Kelley, Chicago.—p. 61.
Rotation Therapy. S. J. Hawley, Danville, Pa.—p. 65.
Radiation Therapy of Carcinoma of Skin: Analysis of Eighty-Three Lesions in Seventy Patients. P. E. Wigby and M. Cohen, Dallas, Texas.—p. 70.
Ocular Hypertelorism with Cleft Palate and Giant Cell Tumor. I. Posner, New York, and A. D. Piatt, Newark, Ohio.—p. 79.

Rhode Island Medical Journal, Providence**23:109-128 (July) 1940**

- Medical Service and the National Health Program. W. G. Phippen, Salem, Mass.—p. 109.
Brain Tumor with Normal Brain Potentials. C. A. McDonald and M. Korb, Providence.—p. 111.
Riboflavin Deficiency with Idiopathic Hypochromic Anemia. R. G. Murphy and E. Damarian, Providence.—p. 114.

Rocky Mountain Medical Journal, Denver**37:473-552 (July) 1940**

- Errors in Diagnosis of Lesions in Biliary Tract. W. Walters, Rochester, Minn.—p. 491.
Diagnosis and Treatment of Puriform Vaginal Discharges. J. B. Hartwell, Colorado Springs, Colo.—p. 497.
Administration of Parenteral Fluids. P. F. Miner, Laramie, Wyo.—p. 500.
Industrial Medicine from the Standpoint of the Internist. L. W. Frank, Denver.—p. 502.
Chronic Miliary Tuberculosis. W. J. Hinzelman, Woodmen, Colo.—p. 508.
Relationship of Physical Therapy to Practice of Medicine. O. L. Huddleston, Denver.—p. 513.

Southern Medical Journal, Birmingham, Ala.**33:673-782 (July) 1940. Partial Index**

- *Eclampsia: Review of 350 Cases Stressing Therapy. R. Torpin, Augusta, Ga., and W. W. Coppedge, East Point, Ga.—p. 673.
Progress in Syphilis Control in the Southern States. J. R. Heller Jr., New Orleans.—p. 681.
Public Health Aspects of Treatment of Congenital Syphilis in a Southern City: Preliminary Report Based on Treatment of 121 Infants with Congenital Syphilis Using Stovarsol by Mouth and Follow-Up of 832 Infants at 6 Months of Age Born of Syphilitic Mothers. D. W. Goltman, Memphis, Tenn.—p. 687.
Treatment of Congenital Syphilis. E. F. Naef and R. P. Vieth, New Orleans.—p. 691.
Professional Anesthesia in Small Community. E. B. Tucker, Morgantown, W. Va.—p. 699.
Cerebral Complications in Sickle Cell Anemia. A. L. Skoog, Kansas City, Mo.—p. 714.
*Lichen Planus Treated with Bismuth Arspenamine Sulfonate (Bismarsen). A. H. Conrad, A. H. Conrad Jr., P. Mapother and R. S. Weiss, St. Louis.—p. 721.
Sterility: From the Point of View of the Gynecologist. C. G. Collins and H. E. Miller, New Orleans.—p. 737.
Id.: From the Point of View of the Urologist. E. Burns, New Orleans.—p. 740.
Id.: From the Point of View of the Endocrinologist. E. P. Thomas, New Orleans.—p. 744.
Etiology and Treatment of Traumatic Surgical Shock. H. Wilson, Memphis, Tenn.—p. 754.
Some Phases of Eye Injuries: Their Management and Medicolegal Aspects. E. W. Griffey, Houston, Texas.—p. 757.
Health Education for the Public. M. P. Neal, Columbia, Mo.—p. 763.
Malingering Responsible for Long-Continued, Unexplained Fever. S. Schnur, Houston, Texas.—p. 768.
Treatment of Scarlet Fever. H. J. Jacobson, Memphis, Tenn.—p. 774.
Use of Oxygen in Joints in Preventing Adhesions from Trauma and Infection. E. B. Henson, Charleston, W. Va.—p. 776.

Eclampsia.—Torpin and Coppedge encountered 350 cases of eclampsia among 16,000 live births to white women and 11,300 live births to Negro women. There was an incidence of one case of eclampsia to every ninety-six live white and sixty-one live Negro births. The majority of the cases among the Negroes occurred from the age of 15 to 19 and in the white from 16 to 20 years, inclusive. While the incidence is less in the older individuals of both races, the relative mortality among them is greater. Eclampsia occurred about twice as frequently in the primipara as in the multipara in the Negro, but only about one and one half times as often in the white primipara as in the white multipara. There was no evidence of cyclic variation in incidence over the twenty years during which the 350 cases occurred. Consequently a relation to weather, heat, humidity and atmospheric changes was not evident. The authors outline the following five point treatment of eclampsia: 1. Two Gm. of magnesium sulfate intravenously in sterile 10 per cent solution every hour as long as the systolic blood pressure is 160 or more; convulsions must be stopped, if mild, with paraldehyde and, if severe, with sodium phenobarbital. 2. A salt-free diet. 3. Intravenous injection of 3,500 cc. daily of a 5 per cent solution of dextrose in sterile distilled water while the patient is in coma, and oxygen and blood when indicated. 4. Absolute rest, with the foot of the bed elevated and constant duodenal nasal tube suction when the patient is comatose to prevent aspiration pneumonia. 5. When the condition improves or becomes stationary, induction of labor by rupture of membranes, if at term, or by catheter or bag insertion, if premature. Among the 183 Negro patients there were twenty-five deaths, a rate of 13.6 per cent. Of the 167 white patients twenty died, giving a mortality rate of 11.9 per cent. The stillbirth rate among the 200 recorded was 33 per cent in the Negro and 29 per cent in the white patients. During the time of the first half of the series veratrum viride was relied on to control convulsions, in the second half magnesium sulfate, with a resultant reduction in the general mortality.

Bismuth Arspenamine Sulfonate for Lichen Planus.—Conrad and his co-workers treated cases of hypertrophic, generalized and localized lichen planus with bismuth arspenamine sulfonate. The treatment consisted of injections of 0.1 Gm. of the drug twice a week. The usual minor reactions to the drug were encountered. The first few injections caused some discomfort, but with the continuance of treatment this was less frequent. In the usual case of three to four months duration relief of subjective symptoms is experienced after the fifth or

sixth injection and an apparent cure may be accomplished by fifteen or twenty injections. In the more chronic cases in which the disease has been present for months or years, and especially when the lesions have become hypertrophic, the number of injections to effect relief or apparent cure increases. In some cases the hypertrophic lesions begin to show evidence of involution after about the tenth injection and from that time on many show a definite tendency to decrease in size. The pruritus, while still present in patients with the hypertrophic type, definitely decreases and the patients usually are much more comfortable. This treatment was efficacious in the treatment of lesions of the mucous membranes. Among the authors' twenty-five cases the seven that involved the oral mucous membranes cleared up, but two relapsed. One case involving the glans penis failed to clear up. They conclude that, although the series is small and more work must be done, bismuth arsphenamine sulfonate seems to be of value in the treatment of lichen planus, especially in cases affecting the mucous membranes.

Southern Surgeon, Atlanta, Ga.

9:459-538 (July) 1940

- *Diagnosis and Surgical Treatment of Chronic Constrictive Pericarditis. S. W. Harrington and Arlie R. Barnes, Rochester, Minn.—p. 459.
- Obstructive Jaundice: Diagnosis and Treatment. J. E. Pittman, Houston, Texas.—p. 485.
- Prevention of Wound Disruption. E. G. Ramsdell, White Plains, N. Y.—p. 495.
- Diagnosis and Surgical Treatment of Carcinoma of Larynx. E. A. Looper, Baltimore.—p. 513.
- Mastoid as Reservoir in Chronic Otorrhea: Chronic Exudative Sclerosing Mastoiditis. Sobisca S. Hall and H. V. Thomas, Clarksburg, W. Va.—p. 522.
- Sulfanilamide and Staphylococcus Antitoxin: Report of Their Combined Use in the Successful Treatment of Staphylococcal Septicemia. E. J. Cathell and J. L. Cathell, Lexington, N. C.—p. 531.

Chronic Constrictive Pericarditis.—Harrington and Barnes say the dominating symptoms of chronic constrictive pericarditis are dyspnea, ascites and edema of the legs. Dyspnea is present on exercise but absent when the patient lies flat. The cardiac output is reduced, the blood pressure low and the pulse rate uniformly accelerated. The condition usually is not associated with valvular heart disease and hence murmurs are absent. Calcification of the pericardium can be demonstrated by careful x-ray examination. If this confirmation is lacking, the electrocardiogram may yield diagnostic information. Anorexia, epigastric fulness and distress are an important subjective symptom. It probably is due to impaired function of the liver which they encountered in nine cases. In the advanced stage the venous pressure is elevated and the circulation time is increased. This distinguishes the condition from cirrhosis of the liver. The authors advise general anesthesia, preferably cyclopropane, because the operation may require considerable time. Their approach to the pericardium and heart in their nine cases was through the left side of the thoracic wall. They believe it is advisable to remove as much of the pericardial scar as possible from the ventricles, the right auricle and orifice of the inferior vena cava and to separate the scar from the diaphragmatic attachments of the right ventricle. The apex of the heart should be separated early in the operation. During removal of the pericardial tissue, when the pulse becomes very irregular, the operation should be interrupted and sponges moistened with warm saline solution should be applied. This permits the heart to regain or partially regain its former rhythm. The wound is closed in two layers with drainage at the lower angle. The inner layers of intercostal muscle and perichondrium are sutured to the posterior sternal fold with interrupted catgut sutures. The skin and outer layers of muscle are closed with interrupted dermal sutures. All patients are placed in oxygen cabinets or tents. Drains are removed in from thirty-six to forty-eight hours. Other postoperative measures are directed toward removal of body fluids and aiding the function of the liver. Intake of fluid is limited. Extensive calcification, associated with the fibrous constricting pericardium, was present in seven of the authors' cases. Of the two cases of fibrous pericarditis without calcification, one was proved to be due to tuberculosis and in the other tuberculosis was suspected but not proved. Three patients were cured, three were improved and three died three, four and twenty-nine days after operation. In only one of the

three fatal cases could any degree of improvement be expected. The damage to the liver was the most important factor in the patient's inability to recover. In the two other cases an appreciable improvement was improbable, for in one the myocardial degeneration with deposits of calcium extended through the heart muscle and in the other one the underlying etiologic factor was tuberculosis. The three cured patients presented the typical picture of Pick's disease and all had extensive calcification of the pericardium with constriction of the heart muscle. The results, after adequate removal of the constricting pericardium, exemplify the capability of the heart and liver to reestablish function if the damage has not been too great. The myocardium of all three was separated satisfactorily from the surrounding attachments.

Virginia Medical Monthly, Richmond

67:393-464 (July) 1940

- *Arsenical Dermatitis from Tobacco. E. E. Barksdale, Danville.—p. 393.
- Vaginal Prosthesis. W. L. Peple, Richmond.—p. 397.
- Observations Based on Study of 1,434 Skin Cancers. C. Phillips, Temple, Texas.—p. 400.
- Effect of Chronic Morphinism on Sympathetic Ganglion Cells of Rabbits. E. H. Ingersoll, Richmond.—p. 406.
- Intracranial Hemorrhage: Diagnosis and Treatment. T. N. Spessard, Norfolk.—p. 410.
- Distribution of Vitamin B₆ and Filtrate Factor in Hog Liver. Sarah Covey and J. C. Forbes, Richmond.—p. 414.
- Endocrinology Briefs: Thyroid Gland. J. P. Lynch, Richmond.—p. 416.
- Serum Reaction in Pneumonia Therapy: Case Report. B. S. Yancey, Harrisonburg.—p. 418.
- *Klippel-Feil Syndrome. H. G. Hadley, Washington, D. C.—p. 421.
- Stone Formation in Kidneys. J. A. Shackelford, Martinsville.—p. 424.

Arsenical Dermatitis from Tobacco.—Barksdale calls attention to arsenical exfoliative dermatitis from tobacco. In recent years lead arsenate has been used widely as an insecticide on tobacco to kill the tobacco worm. Previously this worm was killed by hand. Tobacco is frequently sprayed with lead arsenate while it is growing. When it is placed on the market the lead arsenate remains on the leaf as a white powder and nothing is done in the redrying or manufacturing process to remove it. Consequently almost every cigaret on the American market today contains arsenic in an amount which might be dangerous to the person who does not have a high tolerance for it. The author has analyzed five brands of cigarets from packs bought on the open market. One or two cigarets were analyzed for its arsenic content, and then one or two more from the same pack were analyzed for arsenic after they had been smoked to an ash. The entire cigaret was burned up before the analysis was made. This analysis showed that an appreciable amount of arsenic is lost in the smoking process and so the person inhaling it could absorb it through the mucous membrane of the respiratory tract. The author reported five cases of arsenical exfoliative dermatitis from tobacco in the *Virginia Medical Monthly* (66:660 [Nov.] 1939). He cites several more cases. The Gutzeit arsenic test was used for the analysis of the cigarets as well as for the examination of the body fluids of the patients. The cases with exfoliative dermatitis and a high blood arsenic content cleared up on practically no treatment other than the removal of tobacco. It is thought that exfoliative dermatitis is an allergic phenomenon. The majority of people can use tobacco containing arsenic because they are not sensitive to it, just as the majority of syphilitic patients can take arsphenamine without harmful results. The author thinks that patients develop exfoliative dermatitis from the arsenic in the tobacco because they are hypersensitive to it. The allergic state probably causes a spasm of the arterioles, thereby preventing normal excretion with the resulting retention in the body. The clinical observation that these patients have shown much improvement when the tobacco has been removed is probably the most definite proof that the latter is the cause of their condition. The blood of patients with exfoliative dermatitis from other causes apparently does not contain arsenic even though they are heavy smokers. The blood of normal individuals, even though they are heavy smokers, does not contain arsenic. The author recognizes that the number of cases reported is not sufficient to warrant any definite conclusions.

Klippel-Feil Syndrome.—According to Hadley, the symptom complex of short neck, growth of the hair low down on the neck and limitation of head movements which now bears the

name of the Klippel-Feil syndrome is found with congenital anomalies of the cervical spine. He presents three cases. The first patient, a man aged 48, was operated on at the age of 20 under a mistaken diagnosis of congenital torticollis. The deformity persisted. There was a marked cervicodorsal lateral curvature to the right and limitation of the head movements in all directions. X-ray examination showed a fusion of the second and third cervical vertebrae and an incomplete development of the left half of the sixth, forming a wedge-shaped vertebra. There was an upright cervical rib present. The second patient, a woman aged 37, was noted to have an abnormally short neck with a low margin of the hair. She had considerable lack of motion of the neck with the head tilted to the right. X-ray examination showed that the first and second, as well as the fifth and sixth, cervical vertebrae were fused. There was also a spina bifida occulta of the sixth and seventh cervical and first four thoracic vertebrae. The third patient, a woman aged 44, complained of pain in the left shoulder which was higher and closer to the vertebrae. There was marked limitation of movement of the left shoulder. X-ray examination showed a typical Sprengel's deformity with articulation of the left scapula to the first, second and third thoracic vertebrae. Spina bifida occulta of the first, second and third thoracic vertebrae was present and a scoliosis with the convexity to the left. A complete x-ray study is essential for the exact diagnosis of the deformities of the spine. Anterior oblique films, both right and left, are taken at the level of the fifth cervical and an anterior posterior film through the mouth. The cephalic extremity and its articulation giving a complete image of the atlas can be roentgenographed through the nasal cavity or anteroposteriorly with the central ray 1 cm. above the point of the nose and the lateral view through the center of the lobe of the ear. The distal extremity is best taken by an anteroposterior film through the center of the first dorsal. The remainder of the spine should also be roentgenographed for possible associated abnormalities, as various forms of numerical and morphologic anomalies may be found. The typical Klippel-Feil syndrome is due to a numerical reduction of the cervical vertebrae. With this may be associated a spina bifida anterior, which causes usually a cervical dorsal curve with the convexity generally to the left and with a sharp inflection at the summit. Spina bifida posterior usually causes an abnormal neck having an inclination of the head to the side and an elevation of the corresponding shoulder. An atlas-occipital fusion often presents a form resembling spasmodic torticollis if the disturbance is asymmetrical or, if symmetrical, resembling Pott's disease. In the clinical study the shortness of the neck bears a relation to the gravity of the malformation and the head in severe deformities appears to repose directly on the trunk. A round back may be present, owing to the absence of or alternation of the normal cervical curve. Accessory signs are scoliosis, disproportion of the length of the arms and the trunk and low placement of the ears; there is ascension of the skeleton in relation to the skin. An elevation of the scapula is a striking accompaniment.

Western J. Surg., Obst. & Gynecology, Portland, Ore. 48:403-468 (July) 1940

- *Malignancy of Small Intestine. C. W. Mayo, Rochester, Minn.—p. 403.
- *Acute Staphylococic Infections of Renal Cortex. C. Baumeister, San Jose, Calif. and G. R. McCutchan, Portland, Ore.—p. 408.
- Wound Healing. P. Johnson, New York.—p. 415.
- Adrenal Gland in Hyperthyroidism: Cortical Function. E. C. Bartels, C. K. Stuart and Edith C. Johnson, Boston.—p. 424.
- Liver Failure as Factor in Postoperative Delirium in Patients with Hyperthyroidism. G. Crile Jr., Cleveland.—p. 438.
- Differential Diagnosis of Hyperthyroidism from Conditions Simulating It. A. H. Noehren, Buffalo.—p. 445.
- Mortality Following Surgical Treatment of Goiter. T. O. Young, Duluth, Minn.—p. 451.
- Review of Progress in Study of Goiter Heart. L. F. Bishop Jr., New York.—p. 459.

Malignant Lesions of Small Intestine.—According to Mayo, 108 cases of surgical malignant lesions of the small intestine were encountered at the clinic from 1907 to 1939 inclusive. This represents 1.5 per cent of the surgical malignant lesions of the stomach and 1.4 per cent of the surgical malig-

nant lesions of the large intestine observed during the same time. The jejunum was affected most frequently. The ratio of multiple lesions to single lesions in the small intestine was about the same as that in the large intestine. The vast majority of these lesions occurred among patients whose average age was 52.6 years. This pathologic change occurred about two and one half times as frequently among men as among women. The actual or tentative diagnosis of a malignant lesion of the small intestine was made in 25.7 per cent of 101 cases. It seemed to have been somewhat easier in cases in which the growth occurred in the jejunum and duodenum. The two main features which stood out were recurrent attacks of intestinal obstruction with intercurrent relief and anemia, weakness and fatigability. A careful history will often reveal the fact that these later symptoms antedate the gastrointestinal complaints. Loss of weight, although constant in the late stages, is inconstant early in the disease, as is also constipation. One could assume that, the higher the lesion is in the intestinal tract, the more quickly the symptoms would present themselves. This is not the case. Barium sulfate orally for x-ray examination in the presence of obstruction in the small or large intestine is inadvisable. With the advent of the Miller-Abbott tube for intestinal decompression, barium sulfate in fine solution could be used and the portion of intestine proximal to the site of obstruction can now be satisfactorily cleansed prior to operation, but close attention and careful effort by competent physicians are essential. The roentgenogram, when it signifies the presence of a lesion of the intestine, reveals evidence of a narrowing or filling defect of the intestinal lumen at the site of the lesion and a compensatory widening proximal to the obstruction. The retention of barium sulfate in the small intestine for more than eight hours should arouse suspicion of a pathologic lesion and stimulate further effort toward localization of the lesion, if compatible with the condition of the patient. Surgical procedures in the 108 cases were carried out by eighteen surgeons. When possible, resection and reestablishment of intestinal continuity was the operation of choice and the next choice was a palliative procedure and exploration. Closure was employed only when the other two procedures were not applicable or were deemed to be without benefit. Resection (42.4 per cent) could be accomplished most frequently for lesions of the ileum, palliation (41.3 per cent) such as gastro-enterostomy was the most usual procedure for malignant lesions of the duodenum and exploration alone was possible in 16.3 per cent. The typical malignant lesion of the small intestine is an adenocarcinoma, much the same ring, constricting type that is frequently observed in the distal half of the colon. Leiomyosarcoma made up a little less than 10 per cent of the malignant lesions in this region. Metastasis first involves the lymph nodes of the mesentery, then the peritoneum, liver, lungs, long bones and dura mater. Of eighty-five patients operated on prior to January 1938, eighty-three were traced and of these twenty-five, or 30.1 per cent, survived for more than a year. Of sixty-six patients operated on prior to January 1934, sixty-five were traced for five years and eight, or 12.3 per cent, survived for five years or more.

Renal Cortex Infection.—Baumeister and McCutchan stress the importance of recognizing staphylococic infections of the renal cortex. They outline a new clinical test for differentiating the condition from other kidney infections. Sulfanilamide is efficient in the treatment of pyelitis and pyelonephritis, especially cases due to *Bacillus coli*, *Bacillus proteus* and staphylococci. Sulfamethylthiazole is the most efficient and least toxic of the drugs used thus far against staphylococci. A sterile urine is nearly always produced in from two to four days, provided the infection is not complicated by malformation, neoplasm or stone in the urinary tract. These sulfamide antiseptics have no effect in staphylococic cortical infections of the kidney. There is a septic thrombosis of the glomerulus and the beginning of the renal tubule. The blood supply of these areas is cut off and antiseptics cannot reach them. In pyelonephritis no such state of affairs is present, the blood supply being relatively intact. Some other common conditions from which the differential diagnosis may have to be made are appendicitis, intra-abdominal

abscesses due to ruptured appendix, gynecologic inflammations, perforated gallbladder, perforated diverticulitis, perforative carcinoma of the colon and renal and ureteral calculi. The matter of treatment is highly controversial. These patients must first have supportive therapy. Their water and electrolyte balance must be kept at the proper levels. A good percentage recover spontaneously. If the patient does not show definite improvement in a few days, an operation should be performed before the condition becomes too severe or a perinephric abscess forms. Decapsulation is unnecessary if the abscesses lie close to the surface. Following mobilization of the kidney, a gauze pack is wrapped around it and kept soaked with a solution of 25 per cent glycerin in saturated magnesium sulfate solution. The patient is kept on his back with an electric heat pad applied continuously. After a few days the pack is withdrawn, and rubber drains are placed around the kidney. Moist surface packs are applied.

West Virginia Medical Journal, Charleston

36:289-336 (July) 1940

- *Management of Head Injuries. J. M. Meredith, University, Va.—p. 289.
Pyelitis of Pregnancy. C. E. DeAngelis, Little Rock, Ark.—p. 301.
Trends in American Obstetrics in the Last Decade. H. E. Baum, Charleston.—p. 303.
The Idealist in Medicine. F. E. Keller, Philadelphia.—p. 308.
Chronic Infection of Cervix with Pelvic Pain and Menstrual Disorders: Clinical Entity. J. W. Carney, Logan.—p. 314.
Congenital Megacolon Observation. S. A. Ford, Edwight.—p. 317.
Unusual Allergic Dermatitis Following Use of Estrogenic Hormone in Oil. R. C. Greenberg, Terra Alta.—p. 320.

Head Injuries.—Meredith presents a statistical survey of 391 unselected cases of acute head injury. The state of consciousness is the most important single factor in evaluating the status of any patient with an acute head injury. X-ray examination of the skull of all patients rendered unconscious is imperative and such patients should be hospitalized, at least overnight, or sign a release. Direct palpation and inspection of the underlying skull in all lacerations of the scalp is important to eliminate or establish compound depressed fracture. Lumbar puncture is necessary only in about 15 per cent of head injuries. Dehydration is of little value and morphine is interdicted except for patients with no surgical lesion who remain restless under milder sedation. Alcohol should be disregarded as a factor in the patient's condition unless blood alcohol studies are made. The head should be elevated unless the patient is in shock or much mucus is present in the tracheobronchial tree. Sulfanilamide is of great value for cerebrospinal fluid leaks from the cranial orifices. Nasal tube feedings should be more widely used for any unconscious or semiconscious patient. Hyperthermia should be combated promptly. Operations in head injury cases include those for elevation of depressed skull fractures, diagnostic burr openings and evacuation of clots. Subtemporal decompression is rarely performed today. Occasionally repair of a cerebrospinal fluid leak through the nose is required. An increasing stupor, with signs of increased intracranial pressure, calls for operative intervention. Of the 391 patients with acute head injuries, thirty-three died, a mortality of 8.4 per cent; of forty-two patients operated on ten died, and of 124 with skull fractures twenty-one died. Eighty-seven of these 124 patients had no associated injuries and only eleven died, but of the remaining thirty-seven who had associated injuries ten died. Likewise the mortality for all types of head injuries with associated injuries was 12 per cent as compared to 6.8 per cent of all types of head injuries with no associated injuries. The associated injuries were fractured pelvis, spine or femur and abdominal or chest injuries.

Wisconsin Medical Journal, Madison

39:501-580 (July) 1940

- Clinical Classification of Hemorrhagic Diseases Due to Coagulation Defects. A. J. Quick, Milwaukee.—p. 517.
Traumatic Neurasthenia. J. M. Usow, Milwaukee.—p. 520.
Preoperative and Postoperative Treatment of Toxic Goiter. A. S. Jackson, Madison.—p. 523.
Primary Tuberculosis of Cervix: Case Report. J. A. Tasche, Sheboygan.—p. 526.
Endocrine Preparations of Proved Therapeutic Value. J. H. Hutton, Chicago.—p. 528.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Rheumatism, London

2:185-246 (April) 1940

- History of Rheumatism in Great Britain. H. Rolleston.—p. 189.
Use of Plaster Splintage in Treatment of Arthritis. G. O. Tippet.—p. 195.
Observations on Treatment of Rheumatoid Arthritis. L. C. Hill.—p. 202.
Gonococcal Rheumatism. Doris M. Baker.—p. 208.
Rheumatic Fever Eruptions. H. G. Hadley.—p. 211.
Pelvic Infection as Cause of Rheumatic and Mental Disorders: Its Origin, Cause and Treatment by Electrical Methods, Especially by Diathermy. P. P. Dalton.—p. 214.
Treatment of Chronic Rheumatism by Vaccine Therapy. J. D. Hindley-Smith.—p. 228.

British Medical Journal, London

1:1005-1042 (June 22) 1940

- Treatment of Cerebrospinal Fever with Sulfapyridine. J. H. Jordan, J. H. Blakelock and W. R. Johnston.—p. 1005.
Gastric Disorders in Services. P. H. Willcox.—p. 1008.
Treatment of Sepsis and Trauma by 3 to 6 Meter Short Wave Currents. J. P. P. Stock.—p. 1012.
Some Neurologic Complications of Serum Therapy. A. R. Thompson and J. B. L. Tomblinson.—p. 1015.
*Local Treatment with Protosil Soluble. J. A. Smith.—p. 1016.

Local Treatment with Azosulfamide.—Smith reports five cases in which azosulfamide was used locally. The cases were pneumococcal empyema, abscess in the gluteal region, varicose ulcer, perineal ulcer and a large raw surface on the chest, neck and arms resulting from a severe burn. The drug had antibacterial, deodorant and stimulating action in these cases. Toxic effects did not occur. From these results (and in twenty-five other cases) and from the literature it may be concluded that azosulfamide has a powerful antibacterial effect when in contact with infected tissues. This treatment may be of great value in war wounds and injuries, all of which are certain to be contaminated. The deodorant and stimulating action of the compound may be produced by the dye substance contained in azosulfamide.

Lancet, London

1:1111-1148 (June 22) 1940

- Muscle Lesions Simulating Visceral Disease. J. B. Harman and R. H. Young.—p. 1111.
Thickened Ligamenta Flava in Low Backache and Sciatica. W. E. C. Dickson and R. J. Twort.—p. 1113.
*Chronic Meningococcal Septicemia, Associated with Outbreak of Cerebrospinal Fever. A. W. Stott and W. S. C. Copeman.—p. 1116.
Tropical Macrocytic Anemia in an Indian Treated with Anahemin. N. H. Fairley.—p. 1118.
Serous Pleural Effusions. J. M. Vaizey and K. M. A. Perry.—p. 1120.
Improved Outlook in X-Ray Carcinoma. W. S. Handley.—p. 1122.
Conservation of Useful Thumb After Complete Phalangeal Necrosis. A. K. Henry.—p. 1123.

Chronic Meningococcal Septicemia and Cerebrospinal Fever.—Stott and Copeman state that chronic meningococcal septicemia is not well known in England. The meningococcus may inhabit the blood stream for weeks, months or even years and causes an illness which is so characteristic that it should be as readily recognized as meningococcal meningitis. Recent experience in France has led the authors to believe that chronic meningococcal septicemia is not uncommon but is often overlooked because of a superficial resemblance to other conditions. They present details of seventeen out of twenty-seven such cases they have encountered recently. Although the isolation of the meningococcus from the blood is the only certain method of diagnosis, chronic meningococcal septicemia is so characteristic that bedside diagnosis is simple. Early diagnosis is important, as grave complications may arise. Early diagnosis is also important because sulfapyridine is a prompt and effective remedy. The onset of the disease is usually sudden, with fever, chilly feelings or a rigor, severe headache and severe migratory joint and muscle pains. Within a few days a characteristic rash appears. The lesions are usually pink or red macules, papules and nodules. The papules and nodules are sometimes painful. The rash is most profuse on the limbs and on the back of the

CURRENT MEDICAL LITERATURE

Jour. A. M.
Aug. 24, 1940

Semana Médica, Buenos Aires

47:1525-1564 (June 27) 1940. Partial Index
Treatment of Trichomonal Vaginitis. M. L. Pérez, N. Arenas and O. Blanchard.—p. 1532.
Periods of Fecundity and Infecundity of Women. A. S. Coatz.—p. 1544

Trichomonal Vaginitis.—Pérez and his collaborators found in a group of women cared for in the social maternity hospital of Buenos Aires trichomonal vaginitis with pruritus and discharge, alone or in association with urethritis, cystitis and intertrigo, in 32 per cent of nonpregnant women and in from 50 to 70 per cent of pregnant women. The authors report satisfactory results in a group of 167 women with intravaginal insufflation of a powder of acetarsone or of silver picrate. The insufflations are given at intervals of from five to seven days, during which vaginal douches and coitus are interdicted. The treatment is continued one or two months, involving a total number of from five to seven insufflations. The arsenical treatment is preceded by painting the vagina with a solution of picric acid 1 Gm. in 100 cc. of distilled water. The insufflation consists of 2 Gm. of acetarsone in 4 Gm. of kaolin. The vaginal orifice is occluded with gauze all around the pulverflator and the powder is blown all over the vaginal wall. The silver insufflations are given in the amount of 0.5 Gm. of silver picrate in 5 Gm. of kaolin. In stubborn cases acetarsone is given by mouth. Silver suppositories may be added during the first week of the reported trichomonal vaginitis was controlled by arsenical treatment in 150 cases and by silver picrate in seventeen. Satisfactory results have persisted for from three months to two years after discontinuation of the treatment in the majority of the cases, and for less than three months in a few cases which are still under observation.

Sovetskaya Meditsina, Moscow

Pp. 1-46 (No. 2) 1940. Partial Index
Trachoma and the Army. V. V. Chirkovskiy.—p. 5.
Basic Therapeutic Problems in Trachoma. A. A. Kolen.—p. 7.
Therapy of Trachoma. A. J. Pokrovskiy.—p. 12.
Traumatism of the Eye and Campaign Against It. M. G. Rabinovici.—p. 16.
Malaria in the Mountains. Yu. M. Aleksandrov.—p. 19.
Combined Malarial Therapy. M. E. Efendiev.—p. 20.
*Treatment and Etiology of Nocturnal Enuresis in Children. S. I. Vaynbaum.—p. 32.

Nocturnal Enuresis in Children.—Vaynbaum treated 122 patients with nocturnal enuresis. The patients were examined by an ophthalmologist, a pediatrician, a laryngologist and a neurologist in order to exclude cases of myopia, tonsillar infection and helminthiasis. There were twenty-one patients of ages up to 6 years, seventy-nine up to 10 inclusive, twenty-two above 10 and below 15. There were fifty-nine boys and sixty-three girls. The treatment consisted of daily injection into the gluteal muscles of a 25 per cent solution of magnesium sulfate in doses beginning with 0.5 cc. and increasing gradually up to 3 cc. Enuresis became less frequent after the first few injections and did not occur after from ten to fifteen injections. There were no untoward reactions. The patients were followed up for from six months to one year. All except four were cured. Three patients with congenital syphilis. They were given antisyphilitic treatment, at the termination of which enuresis had disappeared. The second group presented a number of organic, dystrophic alterations and a generally retarded development suggesting that the cause of enuresis here was an increased irritability of the detrusor muscle and weakness of the urinary bladder. The author does not exclude the possibility of congenital syphilis in this group as well. The rationale of the drug on the central nervous system, the peripheral nervous system and the sensory nerve fibers. The treatment of enuresis calls for strict individualization because of the varied etiologic factors. Magnesium sulfate therapy appears to be successful in cases in which there is increased irritability of the detrusor muscle and spastic bladder.

trunk. Successive crops appear, often with the rise of temperature, and each crop lasts for a few days, leaving a slight brownish discoloration. If untreated with the sulfonamides the fever persists for weeks, months or even years. The rise of temperature may be accompanied by chilly feelings or a rigor and a fresh crop of cutaneous lesions. The chief complications are meningitis and infective endocarditis; nephritis and acute epididymitis also occur. In one of the authors' patients with sulfapyridine developed. This disappeared rapidly with sulfapyridine treatment; one patient had a mild peripheral neuritis in the legs with loss of ankle jerks and sensory disturbances, and a few complained of a residual painful stiffness of muscles after all signs of active infection had disappeared. The history of two patients with cerebrospinal fever suggested chronic meningococcal septicemia for from two to four weeks before the onset of meningitis. Sulfapyridine orally in moderate doses terminated the disease in fifteen cases within twenty-four hours. There was a rapid return to health. The authors' experience with the disease has led them to believe that this type of meningococcal infection is common whenever meningococcal meningitis becomes prevalent in a community. The cases recorded were seen within a period of nine weeks during the prevalence of cerebrospinal fever in the British Expeditionary Force.

Medical Journal of Australia, Sydney

1:815-848 (June 15) 1940
Besnier-Boeck's Disease or Benign Lymphogranulomatosis of Schaumann (Besnier-Boeck-Schaumann Syndrome). C. G. Lambie.—p. 815.
Note on Musculature of Human Heart as Illustrated by Pathologic Processes. T. E. Lowe.—p. 826.
Studies in Tuberculosis: IV. Incidence of Tuberculosis Infection in Country People in New South Wales Compared with That in City Dwellers. D. Anderson.—p. 829.

South African Medical Journal, Cape Town

14:187-210 (May 25) 1940
Was the Accused Drunk? L. P. Bosman.—p. 189.
Volvulus of Stomach. S. N. Sennett.—p. 192.
Aural Complications in Cranial Injuries. H. Levit.—p. 193.

Tubercle, London

21:217-248 (April) 1940
Pathogenesis of Tuberculosis of Peripheral Lymph Nodes: Clinical Study of 324 Cases. B. C. Thompson.—p. 217.
Tuberculosis in the Services. S. L. Cummins.—p. 236.

Giornale di Clinica Medica, Parma

21:625-726 (June 10) 1940. Partial Index
Influence of Ascorbic Acid Administered to Normal Persons on Protease, Lipase and Amylase of Blood Serum. G. Nizzi Nuti and P. Cappelli.—p. 625.
*Functional Relations Between Spleen and Stomach. L. Gipperich.—p. 662.

Functional Relations Between Spleen and Stomach.—Gipperich reports observations on four patients with splenomegaly due to venous stasis and Banti's disease. The patients complained for some time about gastric disorders and a dull pain in the left abdominal quadrant, worse after meals. There were disturbances in the amount and the chemism of the gastric secretions, which were in direct proportion to the acuteness of splenomegaly and which were controlled by splenectomy. There after the operation the amount of total secretion and total acidity, which were deficient, increased over normal figures and became normal in a few months. The chemical constituents of the gastric juice became normal after splenectomy. The author believes that the hypophysis maintains a close hormonal relation with the spleen on the one hand and with the secretory functions of the stomach and the chemistry of the gastric secretion on the other. Splenomegaly interferes with the production of hypophysial hormones concerned with the functions and chemism of the gastric secretion. Splenectomy is followed by an early hypophysial reaction with overproduction of such hormones. When the hypophysial reaction is over, the hormonal relations between the hypophysis and the stomach become reestablished with consequent normal gastric secretion and chemism.

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RESPONSIBILITY FOR CHOOSING INTERNS AND INTERNSHIPS

WILLIAM DOCK, M.D.

SAN FRANCISCO

This year the Commission on Graduate Education published its report,¹ in which the history, present illnesses and prognosis of internship and residencies were thoroughly reviewed. Here arguments for and against including a year of hospital service in the requirement for the degree of Doctor of Medicine were presented. However, two more aspects of the responsibility of medical schools toward the appointment of interns deserve study, since they apply not only to the fifth year problem but to present defects in the appointment of interns throughout the whole country.

Certain undesirable situations arise whenever the dean or the administrative office of a medical school is actively concerned with obtaining appointments for senior students. These bad effects are most strikingly seen when the fifth or intern year is required for graduation. There the school must intervene not merely to supervise the choice but actually to guarantee the placing of the student. If the dean or a faculty member or committee has to guide the student or even help him to secure an internship, the school to a greater or lesser degree must appear as a petitioner for favors from hospitals. Beggars cannot be choosers and certainly cannot be critics, so that the school or its representative must pass lightly over the defects of the institutions kind enough to accept the eight or ten students at the bottom of the class. Also, once the school has recommended a man for internship and has begun to count on placing its men in certain institutions, it will find reasons for not allowing any senior student to fail. To do so would put it in the position of reporting, a few weeks before the service begins, that Mr. X, recommended as a competent man in November, has failed to complete his fourth year. This would jeopardize the chance of placing men in that hospital in the future. Hence a distinct drop occurs in the work of the less diligent third or fourth of the senior class in schools where, because of custom or the fifth year rule, the student relies heavily on faculty help in securing his internship and preventing his failure.

It would be a decided tonic to the morale of medical students and of deans and committees on promotion if the school and its staff confined themselves to supplying students with a list of recommended internships and sending hospitals a record of scholastic accomplishment and relative class standing of each student who applied for internship. No personal recommendations should be supplied in an official way, and hospitals

should demand personal interviews or reports from reliable and disinterested third parties, preferably practitioners in the community who were former interns or colleagues of men on the hospital staff. The whole responsibility for choice and attainment of internship should rest on the student, who should realize by the end of his second year that the sort of internship he may look forward to depends on his scholastic record and the good impression he makes on staff members of the hospital he hopes to enter.

There is another evil consequence of medical school solicitude over placing its students in hospitals which is also most apparent where the fifth year is required for graduation. This is the tendency to fill with its own graduates most of the positions in the services which the medical school controls and uses for instruction. This practice has a pernicious effect both on the interns and on the undergraduates. It may diminish the effective competition for positions and lessen the zeal of the best members of the class, to whom these positions normally go, since they have little to fear in the way of outside competition and their relative positions are pretty well determined by the third year. It surely lessens the drive and lowers the morale of the interns, who do not start off in a fresh environment among new associates, all anxious to establish a good record for themselves and for the school from which they come. Instead they run on in the same rut and with the same "gang." With the increasing participation of students in the life of the wards, clinics and operating room, the interns and residents have become even more important than the chiefs and staff members in molding the habits and attitudes of undergraduates. From the staff they pick up tricks of speech or of thought, but from the interns they absorb the working methods and the reactions to patients and to investigation which will determine most of their professional conduct. The selection of interns and residents with a view to getting the best possible men and having them work under conditions which will bring out their finest efforts and behavior is therefore the most important duty of the staff of a teaching hospital, not merely that the opportunity for graduate teaching should not be dissipated but in order to have undergraduates live in the best possible professional atmosphere. The necessity for selecting the best interns and for assembling a group trained in various schools and constantly on their toes is so urgent that it should not be weakened by pleas to absorb as many local graduates as possible and diminish the chore of placing an entire class. To win the gratitude of shy or backward seniors by helping them avoid the responsibility for finding hospital positions or moving into a strange environment, one must accept responsibility for lowering the whole level of graduate or undergraduate work.

The limitation of enrolment, the increase in laboratory and ward work and the emphasis on hours of

From the Stanford University School of Medicine.

1. Graduate Medical Education, University of Chicago Press, 1940.

credit rather than on learning have all contributed to slow down or stop entirely the free movement of medical students from one school to another. The changes of the last forty years have steadily diminished the differences between the work of the last two years of medical school and the first year of internship. Since there can be too much even of good things and since it is possible that "one good custom should corrupt the world," it is desirable that most students should not intern in the wards where they worked as juniors and seniors but should see new methods, hear new teachers and work with new companions. Any change in methods of appointment of interns which increases the movement of medical students from one center to another at this stage of their development is certain to raise the level of internship in hospitals having university connections, and gradually this will have an effect on all hospitals. Customs which increase inbreeding of the hospital staff and make circulation of young medical men more difficult are truly harmful.

The first responsibility of the universities is to improve the internships they control; they can do little to raise the quality of services without medical school contact except by example and certainly not by trying to control the work or make the intern year an undergraduate exercise. The fifth year problem might well be left in the hands of the licensing boards, since it certainly is better to have at least one year of post-graduate work before taking examination for licensure. It must be granted that the average medical graduate of today is far better equipped to practice than the men trained by lectures and recitations a generation ago; that there is really less need for internship before graduation than there was when the fifth year requirement was first imposed. It is proper to commend the wisdom of those licensing boards which insist on a fifth year, but the protection of the citizens should rest with these boards and not be left to the haphazard practice of medical schools, of which only thirteen now have this requirement. Forty-four per cent of the states but only 17 per cent of medical schools make internship mandatory.

The improvement of internships in hospitals without medical school connections can safely be left to the national societies, whose influence has already been so powerfully and effectively applied. Probably the most fruitful change the medical schools could put into effect would be to limit to one half or less of the total number that group of interns chosen from local graduates. Students should be encouraged to visit or do ward work in other hospitals during the summer after the junior year in order to have a better basis for evaluating and to pave the way toward securing an internship. There should also be a more uniform time for appointing interns, no *sub rosa* commitments before this date and a strict avoidance of "trading" between medical schools, so that there would be the least possible pressure to seek to obtain interns or internships by "deals."² It

is desirable to give the maximum freedom of choice to the student seeking hospital appointment and to the hospital staff selecting men for internship. As long as the university attempts to guide or assist the student, this freedom of choice is restricted and the result is harmful to students and to medical schools.

THE CARE OF THE PREMATURE INFANT

ETHEL C. DUNHAM, M.D.

AND

JESSIE M. BIERMAN, M.D.

WASHINGTON, D. C.

Special studies have shown that at least 5 per cent of all infants born alive are born prematurely.¹ This means that more than 114,000 infants were born prematurely in 1938. In the same year more than 31,000 neonatal deaths were reported by the United States Bureau of the Census as directly due to premature birth. The neonatal mortality rate from this cause in 1938 was 13.8 per thousand live births. These figures indicate the importance of the problem at the present time.

The earliest recognition in this country of the role that premature birth plays in infant mortality appears to have been an address on infant mortality given before the American Medical Association in 1857 by Reese.² He stated: ". . . we include among the infant mortality all those recorded interments marked as stillborn and premature births, the extent of which, and especially their amazing increase, constitutes one of the most revolting and yet one of the most important features of our inquiry and one which cannot be contemplated without horror."

From 1857 to the turn of the century, reports with regard to premature infants dealt largely with the viability of these infants, including several reports³ of survival of infants of less than six months' gestation, and of one weighing 1¾ pounds (794 Gm.) at birth.⁴

EARLY RECOGNITION OF CRITERIA OF CARE

Among the earliest papers dealing with methods of care of premature infants was one by Bartlett⁵ in 1827. He referred to the types of incubators in use in Russia and in France and described his "water-jacket warming crib," made large enough to hold triplets! In the same year Taylor⁶ reviewed foreign literature dealing with the care of premature infants and decried the custom of putting on "the usual clothing." He also discussed the relative merits of feeding premature infants by tube and with a spoon.

From the Children's Bureau, United States Department of Labor.

Read before the joint meeting of the Section on Obstetrics and Gynecology and the Section on Pediatrics at the Ninety-First Annual Session of the American Medical Association, New York, June 14, 1940.

1. U. S. Department of Labor, Children's Bureau: *Causal Factors in Infant Mortality*, Pub. 142, Washington, 1925, p. 72.

2. Reese, D. Meredith: *Report on Infant Mortality in Large Cities. The Sources of Its Increase and Means for Its Diminution*, *Tr. A. M. A.* 10: 93-107, 1857.

3. Rozman, J.: *Case of a Child Born Between the Fourth and Fifth Month, and Brought Up*, *Edinburgh M. & S. J.* 11: 455-456, 1835. Routh, C. F. H.: *Case of Viability in a Child Born at Five and a Half Months*, *Tr. Obst. Soc. London* 12: 132, 1871. Kennedy, W.: *Early Viability of the Fetus: An Extraordinary Case*, *South. J. M. Sc.* 1: 234-236, 1866.

4. Murdock, G. A.: *Case of Delivery of a Child Weighing Only One Pound and Three Quarters*, *Am. J. M. Sc.* 68: 575, 1874.

5. Bartlett, J.: *The Warming-Crib*, *Chicago M. J. & Exam.* 24: 449-454, 1827.

6. Taylor, W. H.: *Some Points in Relation to Premature Children*, *Am. J. Obst.* 20: 1022-1028, 1887.

2. In view of the importance of having the best possible intern services to establish the correct atmosphere in wards where undergraduates are being trained, it is desirable that these teaching services should have first choice of interns; this will benefit all hospitals by raising the level of undergraduate training. At present many excellent students who desire such services are lured away by other hospitals which offer the security of very early appointment. It is to be hoped that all the agencies concerned with better medical education will work out methods by which all hospital appointments will be offered on specified dates and that the first offers will be limited to teaching institutions. For example, if the hospitals' first choice of appointments were mailed November 15, the acceptances of the first group of interns could be received and the second choice appointments sent out by December 1 to men who had indicated they were still available; the third choice could be made by December 15. Under such a system the student would take the most desirable service open to him, and the hospital would get the staff which its reputation merited.

According to Ryan⁷ in 1889 "the best food is, of course, the milk of the mother if she be healthy." Only one dissenting opinion was found, that of Adriance,⁸ who contended that the mother's milk after premature labor is not suitable for premature infants because it has a higher protein content than that of milk of women whose labor is at term.

In 1890 Southwick⁹ referred to an incubator first devised by Cr  d   about 1850, describing it as "essentially a bath tub with hollow walls filled with hot water." He reported that this type of incubator was in use in the Boston Lying-In Hospital but added "I am informed that it fails to give perfect satisfaction. The heat comes too near the child without being diffused and the ventilation is defective."

Voorhees¹⁰ in 1900 described the Lion incubator, a French type, and stated that it could be disinfected, that there was provision for ventilation, for moisture and for measurement of the moisture with a hygrometer, and for filtration of the air. He pointed out, moreover, that the infant was visible through glass doors and could be tended without removal from the incubator. All these points are stressed at present in discussing the proper conditions under which premature infants should be cared for in incubators.

From this brief review of the early literature of this subject it can be seen that the three criteria for care of the premature infant now considered fundamentally important were so recognized many years ago. Early efforts, like those of today, were directed toward keeping the infant warm, protecting him from infection and feeding him properly.

PROGRESS IN METHODS OF CARE

In the intervening years, progress has been made in developing methods for care of premature infants. Outstanding contributions are the improvement of incubators by the use of electrical heating devices, the development of air conditioning and air sterilizing, the use of parenteral fluid and blood transfusion, the use of oxygen to overcome asphyxia, and the development of individualized technics for care as a means of preventing infection. Exact assessment of certain methods of care, including feeding, is somewhat difficult, however, because studies designed to test them have not been controlled for such factors as birth weight, gestational age, race, sex and economic status. Furthermore, evaluation of one particular aspect of care, such as feeding, is complicated by the fact that the contribution of other factors to the welfare of the infant such as nursing care and environmental conditions cannot be separated from the effect of feeding.

It might be thought that the principle underlying the care of premature infants should be simulation, as far as practicable, of intra-uterine conditions, but this is obviously an impossible goal. It becomes our problem, then, to devise methods of care which serve to help the infant maintain his physiologic mechanisms inde-

pendently in the presence of changing external conditions. This in turn calls for increased knowledge of the physiology of premature infants so that we may rationally determine the environment and the feeding which will be suitable for him with his limited powers of adaptation.

Maintenance of a constant body temperature depends on a balance between heat production and heat loss. The common nursery practice of wrapping a premature infant like a mummy may, it is true, prevent excessive loss of heat, but it is an effective means of preventing muscular movements which increase heat production. After all, the fetus in utero moves freely after the fifth month and is prepared to do so after birth.

Some type of heating device must be used in caring for premature infants to prevent loss of heat from the skin. A great variety of "incubators" have been produced in recent years, both commercially manufactured and home made. Definite advance has been made in their construction and operation, and clinical

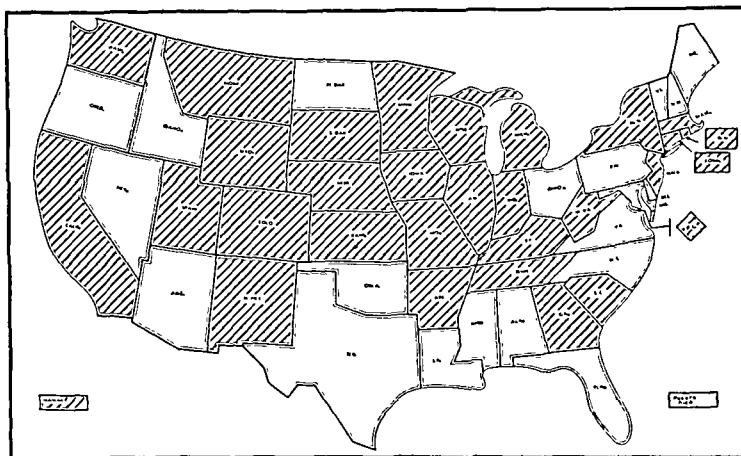


Fig. 1.—States in which the state health department has reported to the United States Children's Bureau some type of program for care of premature infants during the fiscal year 1939-40 (28 states, Hawaii, and the District of Columbia), under Title V, Part I, Social Security Act.

Fig. 1.—States reporting some type of program for care of premature infants.

experience has proved their value in raising and maintaining the body temperature of the premature infant. It should be pointed out, however, that further progress in this direction depends on further knowledge of the optimal environment for premature infants of varying degrees of maturity, on the development of definite standards for construction and operation of incubators and on more exact clinical evaluation of their effect on the infant.

The fluid and caloric needs of the premature infant have been fairly well established. After the first week or two or until his manifestations of hunger become a guide, they can be met by the daily administration of approximately 150 cc. of fluid and 120 calories per kilogram of body weight (2½ ounces and 55 calories per pound).¹¹ During the first week of life the fluid and caloric requirements are less.

IMPORTANCE OF BREAST FEEDING

That human milk is the ideal food for the premature infant is almost universally accepted. The fact remains that long-standing clinical observations support this view. It should be pointed out, however, that pre-

7. Ryan, W. B.: The Treatment of Infants Born Prematurely, *Indiana M. J.* 8: 246-251, 1889.

8. Adriance, V.: Premature Infants, *Am. J. M. Sc.* 121: 410-421, 1901.

9. Southwick, G. R.: The Care of Weak or Prematurely Born Infants, *New England M. Gaz.* 25: 310-313, 1890.

10. Voorhees, J. D.: The Care of Premature Babies in Incubators, *Arch. Pediat.* 17: 331-346, 1900.

11. Gordon, Harry H.: Clinical Problems in the Newborn Infant, *Connecticut M. J.* 4: 191-197 (April) 1940.

mature infants will thrive when fed suitable cow's milk mixtures, but in general the safest and most economical food for these infants is breast milk.

DIET OF THE LACTATING MOTHER

The quantity and quality of breast milk are dependent chiefly on the health and diet of the lactating woman, but there is good reason to believe that more effective efforts are being made to provide adequate diets for lactating cows than for lactating women.

Studies of diets of city and village families in relation to size of income and number in family have shown that in each income class the larger the family the fewer are the protective foods that are purchased.¹² Lactating women need these protective foods in larger amounts than nonlactating women. Human milk will obviously be deficient in certain elements unless special efforts are made to educate lactating women with regard to food purchases and to the use of protective foods (such as milk, tomatoes and citrus fruits, leafy green and yellow vegetables, and eggs). If for economic reasons it is not possible for lactating women to secure these foods in sufficient quantity to protect their own health as well as that of the infant, ways must be found to supplement their diets. It is, of course, well known that even if the nursing mother's diet is adequate the premature infant's food will need to be supplemented in certain respects, for example with vitamin D and iron, and probably with vitamins A, B₁ and C also.

Vitamin D should be given to the premature infant before the end of the second week of life in dosage larger, perhaps by three or four times, than that usually recommended for full-term infants. It should be given in a concentrated form and one which contains adequate amounts of vitamin A also.

The premature infant's requirement for vitamin C can be assumed to be at least that of the mature infant.

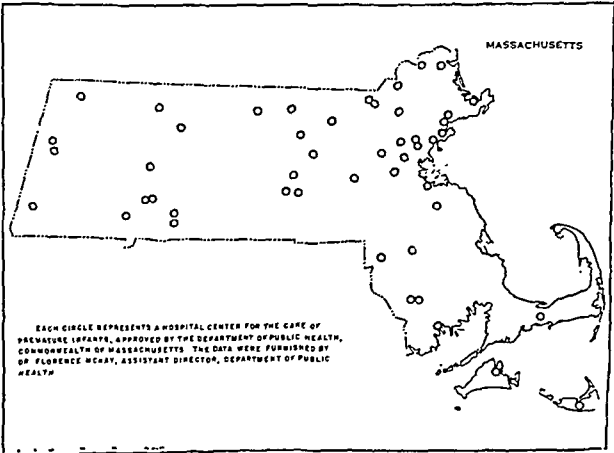


Fig. 2.—Location of hospital centers for care of premature infants.

For the latter Smith¹³ reports that "the recommended allowances fall within the comparatively narrow range of . . . from 20 to 50 mg. daily after the first few days." She quotes Ingalls' estimate that between 500 and 1,000 cc. of breast milk "of good quality" provides the equivalent of from 20 to 40 mg. of ascorbic acid daily. Since the premature infant can take but small

amounts of breast milk and since often he receives breast milk from some woman other than his mother, or pooled breast milk which has been pasteurized or boiled, there will certainly be need for additional vitamin C. To meet the full requirement at least 40 cc. of orange juice would have to be given before the second week of life. Obviously vitamin C will have to be given to premature infants in concentrated form until they are able to take the required amount of orange juice.

Cowgill¹⁴ suggests that the full-term newborn infant's optimal or perhaps minimal requirement for vitamin B₁ is 80 international units a day. Even if the mother's diet is considered adequate in vitamin B₁ there is no assurance that her milk will provide adequate amounts of vitamin B₁ to meet the needs of the premature infant. Supplements of vitamin B₁ have been reported to affect favorably the premature infant's general condition.

Many other needs of the infant handicapped by premature birth could be pointed out. Mention must be made of the fact that neither human nor cow's milk contains sufficient iron to meet the premature infant's need. Although it may not be possible to prevent the development of anemia in premature infants, the condition can be ameliorated by the administration of iron and later by the addition of iron-containing foods to the diet.

Recognition has been given to most of these dietary needs of the premature infant as well as the dosage and the age at which dietary supplements should be given. It is our responsibility to see that they are administered at the proper age in dosage and form suitable to the needs of premature infants and that they are made available to all premature infants.

There are other needs of premature infants about which less is known, for example the need for certain hormones, gland secretions and antibodies which are transmitted from mother to full-term infant. Attempts have been made to provide some of these substances to premature infants but the evidence presented as to their efficacy is unconvincing in many instances and further study is needed.

The burden of responsibility to supply knowledge with regard to well established methods of care of premature infants has been greatly increased in recent years because there has been greater demand for this knowledge and wider application of methods of care. Unfavorable social and economic conditions are also being recognized more widely as barriers to adequate care of premature infants in the home, and advice and assistance given by social workers and public health nurses are recognized as important factors in saving the lives of premature infants.

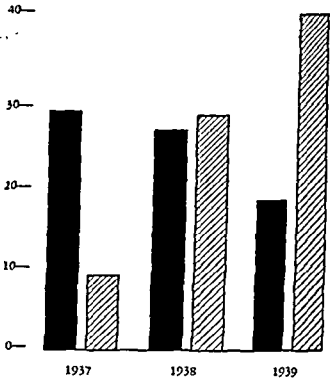


Fig. 3.—Infant deaths due to premature birth and infants cared for in incubators in Cattaraugus County, 1937-1939. Solid bar, infants dying from premature birth; shaded bar, infants cared for in incubators. Reproduced from page 26 of the 1939 Annual Report of the County Department of Health, Cattaraugus County, N. Y.

12. Stiebeling, H. K., and Coons, C. M.: Present Day Diets in the United States, in Food and Life, Yearbook of Agriculture, U. S. Department of Agriculture, 1939, p. 296.
13. Smith, Sibil L.: Vitamin C, in Food and Life, pp. 244-245.

14. Cowgill, George R.: Human Requirements for Vitamin B₁, in The Vitamins, Chicago, American Medical Association, 1939, pp. 240-241.

COMMUNITY PROGRAMS

In addition, standards for equipment and care of premature infants in hospitals and homes have been set up and the acceptance of them has extended. Last, but not least, community organization for care of premature infants has been developed on a wide scale in the last few years.

An example of a citywide plan for care of premature infants is that which has been in operation for about five years in Chicago. During this period the mortality rate from premature birth under 1 month has been lowered 31 per cent (from 13.7 to 9.4 per thousand live births).¹⁵ State organization for care of premature infants has been developed widely during the past five years when funds have been available to the maternal and child health divisions of the state health departments under the terms of the Social Security Act, title V, part 1, administered by the Children's Bureau.

According to the most recent reports received by the Children's Bureau, twenty-eight states, the District of Columbia and Hawaii have already made or plan shortly to make special provisions for the care of premature infants as shown in the map (fig. 1). The plans vary in scope from a plan confined to one area, such as a rural county, or to one aspect of care such as provision of a warm bed, to a statewide plan such as that in progress in Massachusetts. In this state forty-eight centers for care of premature infants have been established in hospitals throughout the state, as shown in figure 2.

Some of the states include in their plans educational programs and the extension of medical and nursing services. In the development of these plans the steps usually taken by the state health departments have been first to study, often in cooperation with the state medical societies, the influence of prematurity on the infant mortality rate of their state and then to make a survey of existing provisions for the care of prematurely born infants in various parts of the state. The Social Security Act directs that rural areas and areas in special need shall receive particular attention, and most states have found existing provisions for care of premature infants in these areas very inadequate.

The educational programs have included the provision of special training in the care of premature infants for members of health department staffs, both medical and nursing, at such centers as the Sarah Morris Hospital in Chicago and the Lying-In Hospital in Boston. The staff member receiving the training, usually a supervising nurse, is thus enabled on her return to teach modern methods of care to the public health nurses of the health department and also to advise the nursing staffs of hospitals in a consultative capacity. Pediatricians on the staffs of state health departments have carried on educational programs for local health officers and have secured the interest and cooperation of practicing physicians in providing improved care for premature infants. Care of the premature infant has been discussed in postgraduate courses for physicians in a number of states. General educational programs have enlisted the interest of the public in providing better facilities for premature infants.

In addition to these educational efforts, which are of course basic to the success of any program, the state health departments have provided or extended the ser-

vices of public health nurses. These nurses assist practicing physicians in caring for premature infants in their homes where necessary, and also teach members of the family the special methods of caring for the infant. State health departments in a number of states give assistance to administrators of hospitals in planning for better facilities for the care of premature infants and in teaching their nurses modern technics in this field. In a few states they have provided qualified pediatricians for consultative services to rural physicians.

That provision of special beds has been effective in favorably affecting the welfare of premature infants directly and indirectly is shown in the bar diagram (fig. 3) taken from the report of the Cattaraugus County Department of Health. It can be seen that in each of three years the number of beds increased and the mortality of premature infants decreased. Obviously there were other factors of improved care that accompanied the provision of beds.

As a result of these special programs, state and local, closer cooperation has been brought about between hospitals, practicing physicians, public health nurses and health and welfare departments. These services have already proved their worth in improving the chances for life of premature infants born at home.

From the annual reports of the Bureau of the Census the trend of mortality from premature birth under one month for the United States as a whole has been charted (fig. 4). It can be seen that the mortality rate decreased only 12 per cent in the twenty year period

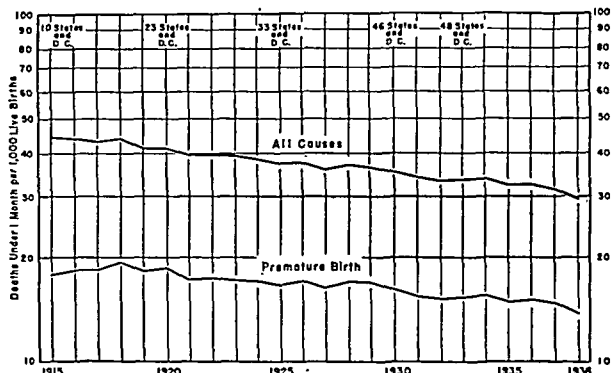


Fig. 4.—Trend of neonatal mortality from all causes and from premature birth, 1915-1938, United States expanding birth registration area. U. S. Department of Labor, Children's Bureau. Source, Reports of U. S. Bureau of the Census.

from 1915 to 1934; from 1935 to 1938, the latest year for which data are available, the rate decreased 7 per cent. It is encouraging to note this significant decrease in a short period of time and to know that the mortality rate for 1938 of 13.8 per thousand live births is the lowest ever recorded for the United States birth registration area.

SUMMARY

The importance of the problem of premature birth is shown by the fact that in 1938 there were more than 31,000 neonatal deaths reported by the U. S. Bureau of the Census as directly due to premature birth.

A review of the medical literature prior to 1890 shows that the importance of the criteria for care of premature infants now considered fundamental were recognized in these early years, namely to keep the infant warm, to protect him from infection and to feed him properly.

15. Bundesen, H. N.: Personal communication to the authors.

Progress has been made in the intervening years in developing methods of care in line with more complete understanding of the physiologic handicaps of premature birth.

Breast feeding is generally recognized as important for the welfare of the premature infant but insufficient attention has been paid to the importance of a proper diet for the lactating mother and to the infant, in addition to supplying certain dietary supplements in amounts adequate for his needs.

The care of the premature infant, previously considered only as it concerned the individual infant, has now developed into a community program. Under the provisions of the Social Security Act, title V (administered by the Children's Bureau), the division of maternal and child health of the state health departments of twenty-eight states, the District of Columbia and Hawaii have in progress or have made plans for more or less extensive programs for the care of premature infants, including educational programs, extension of medical and nursing care, and provision of incubators.

The mortality rate from premature birth under one month has shown a decrease of 7 per cent in the past two years. This reflects the improvement in the technic of care of the premature infant and the effect of extension of care to larger numbers of infants through community organization for this specialized service.

ABSTRACT OF DISCUSSION

DR. HARRY LOWENBURG Sr., Philadelphia: When pooled human milk obtained from the maternity ward is employed as the milk supply in feeding premature infants I have noticed every now and then that such infants develop an unusual degree of drowsiness and lethargy about the second or third day. This lethargy and drowsiness disappear when a change is made to some form of bottle feeding. This last fact has made me suspect that the more or less routine administration to mothers of pentobarbital sodium or other such agents may be the responsible factor, especially since I have also had this experience in individual cases when drowsiness in the infant developed and when the mother had received pentobarbital sodium. This is merely surmise which I have discussed with some Philadelphia obstetricians and I have come to no definite conclusion. It is not difficult to agree with the authors in reference to their recommendations to prevent infection, maintain proper body heat and supply sufficient food and fluid. These are not always so easily accomplished, however, as digestive disturbances frequently occur and thwart our efforts. Particularly is this so when insistence is placed on the early administration of concentrated vitamins. It would be profitable if the authors could go a little more into detail and tell us just how they accomplish all the objectives which they mention without disturbing the gastrointestinal tract; in other words, explain their technic.

DR. ETHEL C. DUNHAM, Washington, D. C.: I had hoped that I would not have to answer questions with regard to certain aspects of the care of premature infants about which considerable difference of opinion exists among physicians. Rather, I would emphasize the fact that a great mass of knowledge about such infants is available which is not being used as widely as it should be. Physicians should familiarize themselves with the well established methods of caring for premature infants, so that they can use their specialized knowledge when called on to guide community programs for the care of such infants. One reason for giving this paper is that, with the rapid spread of community programs for the care of premature infants, physicians in local areas all over the United States are being called on for advice with regard to such programs. It is certain that we know much more about the care of premature infants than we did in the past, and that we are putting much of this knowledge into use; but our responsibility is to see that more of this knowledge is given to the physicians who are carrying on these programs.

DIAGNOSTIC PITFALLS OF THE NASOPHARYNX

FREDERICK T. HILL, M.D.

WATERVILLE, MAINE

The Encyclopaedia Britannica defines diagnosis as "the process of identifying the disease by consideration of the history, symptoms, physical signs and examination in every way of the patient." All these factors are important and essential in making a correct diagnosis. In otolaryngology perhaps more reliance is placed on physical signs that are visual than in most other fields of medicine. In the majority of instances the final interpretation of the clinical picture depends on what is seen in the ear, nose, pharynx or larynx. The habit of wearing the head-mirror throughout working hours, so commonplace among otolaryngologists, is an unconscious acknowledgment of the importance of visual examination in this field.

In 1931, in a paper read before this section, I¹ tried to bring out the importance of visual control by direct inspection in performing an adenoidectomy. In a large series of cases in which operations had been previously performed by many different men, a sufficiently high percentage of unsatisfactory results were found to warrant considerable doubt as to the efficacy of many procedures carried out in the nasopharynx. That this ineffectiveness is not limited to the removal of adenoid tissue is obvious. It must be admitted that the diagnosis of nasopharyngeal disease is frequently missed and that many lesions in this region go unrecognized. Carmody, in a recent paper read before the American Academy of Ophthalmology and Otolaryngology, referred to the nasopharynx in the title as "almost unknown in otolaryngology." In searching for an explanation for this too universal error it would seem that the difficulties in easily and satisfactorily visualizing the region might be the answer. Without in any way depreciating the importance of the history and other diagnostic data, the main pitfalls in the diagnosis of nasopharyngeal disease might be considered as due to four causes:

1. Not looking.
2. Not seeing.
3. Not knowing what to look for.
4. Not interpreting correctly what is seen.

The nasopharynx, like the larynx, is not easily accessible to visual examination and, as a consequence, is not always accorded the thorough and complete inspection so essential to a correct diagnosis. Its situation behind the soft palate, out of the direct line of vision, and the occasional difficulties encountered in indirect examination may at times tempt the physician to neglect or to pass rather hurriedly over this phase of the examination. Yet this region is of vital importance in our specialty and often contains the clues to the correct solution of many clinical problems. The excuse "I could not get a good look at the nasopharynx" should never be permitted. No examination should ever be considered sufficient without a thorough inspection of this region.

From the Thayer Hospital.

Read before the Section on Laryngology, Otology and Rhinology at the Ninety-First Annual Session of the American Medical Association, New York, June 12, 1940.

1. Hill, F. T.: Observations Following Adenoidectomy, Arch. Otolaryng. 14: 775-783 (Dec.) 1931.

This, of course, presupposes a routine examination with the postnasal mirror. Sometimes this is neither easy nor satisfactory. The patient may be uncooperative or possess a sensitive, gaggy throat, making it extremely difficult to obtain a satisfactory view of the entire vault. These difficulties usually may be overcome with patience and perseverance, together with a gentle technic and sometimes the use of a small amount of some local anesthetic sprayed in the throat. The postnasal mirror, however, has certain very definite limitations. There is often considerable variation in the contour of the nasopharynx. The anterior tubercle of the atlas may project forward like the prow of a ship with the lateral spaces flaring out behind, or there may be a concavity in the midline of the vault at the superior-posterior angle. It may be quite impossible to inspect these spaces thoroughly by means of the mirror. In addition there is necessarily more or less distortion of the image in any mirror held at a right angle to the object being examined, and this distortion may be further increased by the presence of mucus in the nasopharynx. Sole reliance should never be placed on the postnasal mirror unless the examination is thoroughly satisfactory and the appearance definite beyond all doubt.

The development of direct laryngoscopy, by means of the laryngeal speculum, marked a great advance in our conception of diseases of the larynx. Rarely today would one depend entirely on what is seen with the laryngeal mirror. Similarly in the nasopharynx some direct method of inspection should be employed in every doubtful case in which there is any question of any abnormal condition. I use the nasopharyngoscope almost as a routine, and it is surprising how often small but significant abnormalities can be noted which were not seen with the mirror. Unless prevented by marked septal deviation, the nasopharyngoscope should be passed through both sides of the nose so that the blind area directly ahead of the instrument can be included. In certain cases the pharyngoscope used through the mouth may be useful.

In the final analysis nothing is quite as satisfactory as direct inspection by elevation of the soft palate. Every otolaryngologist is familiar with the difference

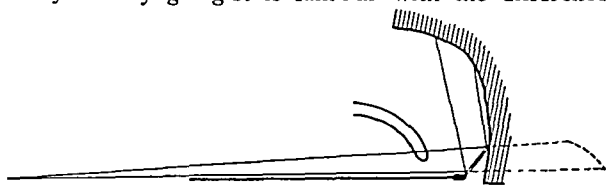


Fig. 1.—Schematic drawing of projection of image seen in the post-nasal mirror. Distortion of posterior pharyngeal wall, which is viewed as if looking down a cylinder.

between the appearance of the larynx when seen with the mirror and when viewed through the direct laryngoscope. The same holds true in the nasopharynx and it is much simpler to do.

For years palpation has been an accepted method of examination of the nasopharynx. It is uncomfortable for the patient and is necessarily done so hurriedly that it is usually unsatisfactory to the examiner. Aside from determining the presence of adenoids or ascertaining the firmness of a tumor mass, it gives comparatively little information. I feel that in examining for adenoids, when the child is too young for the use of the mirror or the nasopharyngoscope, it is distinctly preferable to have the patient firmly wrapped in a blanket and to elevate the soft palate with a retractor.

It does not disturb the child any more and gives the examiner more accurate information.

Some years ago Beck advocated retracting the soft palate by means of a rubber catheter passed through the nose. This is often very helpful in operative work but is hardly necessary for the purpose of examination. Yankauer devised a speculum which allows a very satisfactory inspection of the nasopharynx. Often a simple palate retractor will suffice. Usually a minimum amount of local anesthesia in the adult, to control gagging, is advisable. By this direct inspection, using either the speculum or a retractor, one can see the actual picture without distortion and can better interpret the conditions seen with the nasopharyngoscope or the mirror.

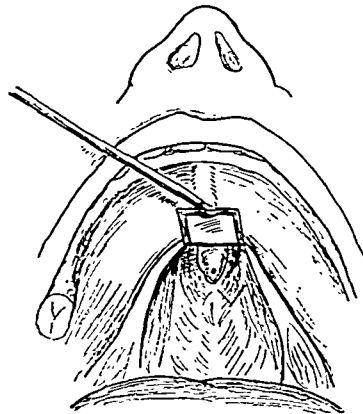


Fig. 2.—Direct view of cyst of pharyngeal bursa.

The roentgenogram may be a most useful and important adjunct to visual examination and should be employed in all cases of suspected malignancy. As pointed out by Furstenberg,² the presenting lesion in the nasopharynx may be so small as sometimes to escape detection, or it may be located in the eustachian tube itself; yet there may be considerable involvement of the base of the skull, which can be discovered by x-ray examination.

As common a pitfall as not accurately seeing the nasopharynx is not knowing what to look for. Too often the clinician is satisfied if he determines the presence or absence of adenoids. Hypertrophy of the posterior tips of the inferior turbinate or adhesions across the fossa of Rosenmüller or the eustachian orifice may explain the symptoms of a conduction deafness. Postnasal discharge may indicate a chronic posterior sinusitis. Choanal polypi or the more serious nasopharyngeal fibromas may result in marked nasal obstruction. New,³ Furstenberg,² Hansel,⁴ Heine⁵ and others have called attention to the incidence of benign and malignant tumors in the nasopharynx. Furstenberg⁶ has described tumors developing from the remnants of the hypophysial duct, which he classified as craniopharyngiomas. Ridpath⁷ has reported chordomas arising from the fetal notochord. Yankauer⁸ Dorrance,⁹ Kully,¹⁰ Woodward¹¹ and Eagle¹² have

2. Furstenberg, A. C.: Malignant Neoplasms of the Nasopharynx, Surg., Gynec. & Obst. **66**: 400-404 (Feb.) 1938.

3. New, G. B.: Syndrome of Malignant Tumors of the Nasopharynx, J. A. M. A. **79**: 10 (July 1) 1922.

4. Hansel, F. K.: Malignant Tumors of Nasopharynx, Tr. Am. Laryng. A. **53**: 72, 1931.

5. Heine, L. H.: Malignant Tumors of the Nasopharynx, Arch. Otolaryng. **22**: 51-61 (July) 1935.

6. Furstenberg, A. C.: A Clinical and Pathological Study of Tumors of the Nose, Pharynx and Mouth of Teratological Origin, Tr. Am. Laryng. A. **56**: 231-248, 1936.

7. Ridpath, R. F.: Chordoma: With Report of Two Cases, Tr. Am. Laryng. A. **60**: 255-267, 1938.

8. Yankauer, Sidney: Nasopharyngeal Abscess: Report of 155 Cases, Tr. Am. Acad. Ophth. & Otolaryng., 1929, pp. 364-375.

9. Dorrance, G. M.: The So-Called Pharyngeal Bursa in Man, Arch. Otolaryng. **13**: 187-224 (Feb.) 1931.

10. Kully, B. M.: Cysts and Retention Abscesses of Nasopharynx, Tr. Am. Laryng., Rhin. & Otol. Soc. **40**: 185-199, 1934.

11. Woodward, F. D.: Nasopharyngeal Abscesses and Cysts, Tr. Am. Laryng., Rhin. & Otol. **43**: 73-77, 1937.

12. Eagle, W. W.: Pharyngeal Bursae (Thornwald's Bursae): Report of Sixty-Four Cases, Laryngoscope **49**: 199-207 (March) 1939.

reported numerous cases of nasopharyngeal cysts or bursae. Beck¹³ refers to primary tuberculosis in this region. Congenital defects, such as atresia of the posterior choanae, are occasionally encountered. Suppuration of the petrous apex may point in the nasopharynx. If one keeps these possibilities in mind the

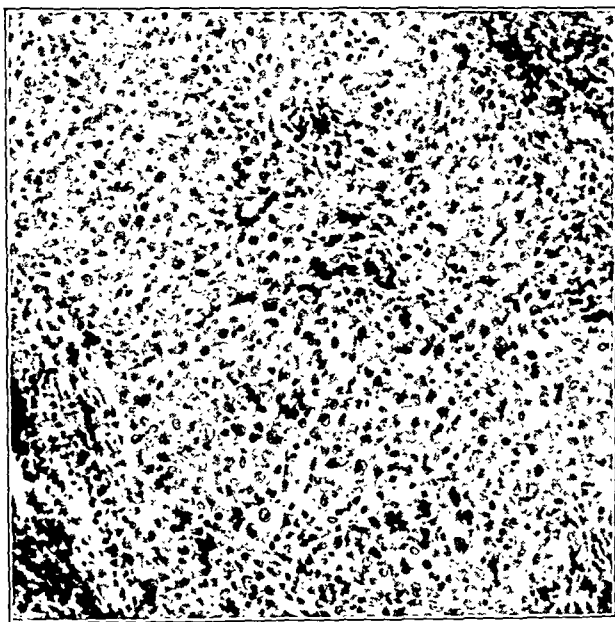


Fig. 3.—Section of lympho-epithelioma of nasopharynx; reduced from a photomicrograph with a magnification of 280 diameters.

pitfall of incorrect interpretation need not loom so large. Utilization of all other diagnostic data should solve the problem in the majority of cases.

Malignant tumors of the nasopharynx often manifest themselves first by what Hansel⁴ refers to as extra-nasopharyngeal signs and symptoms, usually through involvement of the cranial nerves. New,³ with his vast experience in these cases, has emphasized the diagnostic importance of diplopia, facial pain and disturbances in swallowing as early symptoms. While any of the cranial nerves may be affected, those most commonly involved are the sixth, fifth, ninth, tenth, eleventh and twelfth. Furstenberg² states that the presence of posterior cervical adenopathy, pain referred to the throat or ear and signs of a unilateral conduction deafness should excite the suspicion of a malignant growth of the nasopharynx. Involvement of the pterygoid muscles may result in trismus. Any patient with an unexplained cranial nerve involvement, with or without cervical adenopathy, should be most thoroughly investigated with the thought in mind of a possible malignant neoplasm of the nasopharynx.

A youth aged 17 was seen because of unilateral deafness. He had been under treatment elsewhere and had many inflations and a submucous resection of the septum performed. The posterior cervical nodes were palpable and he had some degree of trismus. Nasopharyngoscopy showed a mass of what appeared like adenoid tissue in the left fossa of Rosenmüller, impinging on the orifice of the eustachian tube. Histopathologic examination showed this to be a "lympho-epithelioma." While he did remarkably well for about two years under high voltage roentgen therapy, he subsequently died from extensive metastases.

A boy aged 14 years was seen in consultation because of marked cervical adenopathy. There was a history of repeated

severe epistaxis necessitating packing of his nose during the preceding few months. Although the source of the bleeding was obviously in the nasopharynx, no consideration had been given to the possibility of a malignant growth. Biopsy showed the lesion to be an epidermoid carcinoma grade 3 and the patient was referred for high voltage roentgen therapy.

Yankauer's⁸ report of 155 cases of nasopharyngeal abscess in 1929 revived interest in so-called Thornwaldt's disease. While not in entire agreement with Yankauer that these were retention abscesses in the recessus medius of a residual adenoid, a number of observers have reported sufficiently large series of cases to suggest that the presence of cysts in the nasopharynx is frequently overlooked. As stated by Kully,¹⁰ there are probably two types: the retention cyst in a residual adenoid, such as described by Yankauer and which is easily opened with a probe, and the cyst, considered by Dorrance⁹ as due to the persistence of an embryonal bursa, originating from adhesions of the notochord to pharyngeal ectoderm. The latter, when viewed by direct inspection, appears smooth, round, yellow or white and from 1 to 2 cm. in diameter. It may have a small opening in its center either exuding secretion or covered with a scab, or it may appear tense and fluctuant. A cutting instrument is required to open this. It contains thick gelatinous material which often shows a positive culture from streptococcus or staphylococcus. Its walls are smooth and shiny. Either type of these cysts may give rise to a postnasal discharge, cause a variety of symptoms affecting the ear or act as a focus of infection. As previously stated, they are frequently overlooked and are best diagnosed by direct inspection of the nasopharynx.

A woman aged 40 was referred by an ophthalmologist because of a persistent cyclitis. Her general physical examination was

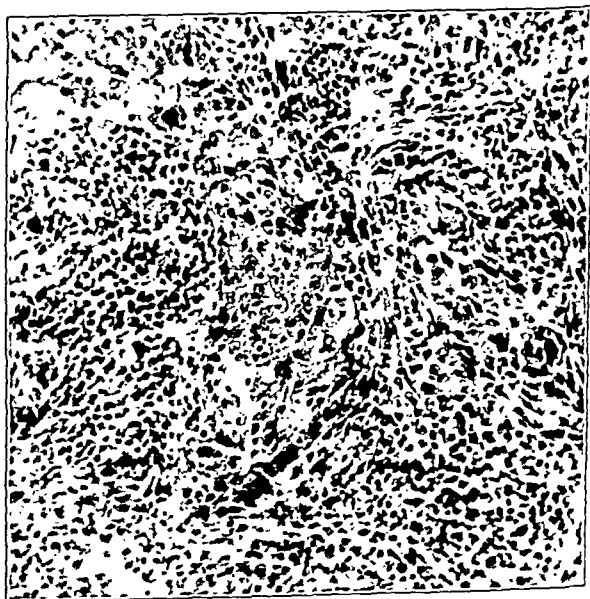


Fig. 4.—Section of epidermoid carcinoma of nasopharynx; reduced from a photomicrograph with a magnification of 350 diameters.

negative. Her tonsils had been removed. X-ray examination of the sinuses gave normal results. Examination of the nasopharynx showed a small cryptic bit of tissue directly behind the vomer, covered with a small scab. Marked improvement followed removal. This was a retention cyst in a small residual adenoid.

A man aged 27 complained of postnasal discharge, tinnitus and a feeling of stuffiness in the ears. His tonsils had been

13. Beck, J. C.: *Applied Pathology in Diseases of Nose, Throat and Ear*, St. Louis, C. V. Mosby Company, 1923, p. 170.

removed. His condition had been diagnosed as sinusitis and an antrum operation had been advised. X-ray examination of the sinuses gave normal results. Examination of the nasopharynx showed a round, symmetrical, pale tumor in the midline, somewhat tense and fluctuant, with a small opening in the lower portion. This was operated on under local anesthesia and the lining was destroyed by electrocoagulation. Following this his symptoms gradually subsided. This was a cyst of the pharyngeal bursa.

Such cases as these are far too common for one to view with any degree of complacency the frequency with which the diagnosis of nasopharyngeal disease is missed. While at times the correct diagnosis may present difficulties, the stage at which many of these cases are seen warrants the opinion that the greatest difficulty is due to hasty and incomplete examination and that greater care in this regard would eliminate many of these errors.

CONCLUSION

1. Most of the errors of diagnosis of nasopharyngeal disease are due to the otolaryngologist not accurately visualizing the nasopharynx and not keeping in mind the disease possibilities in this region.

2. Direct inspection of the nasopharynx by elevation of the soft palate is the most accurate and valuable method of examination of this region.

Professional Building.

FIBROMAS OF THE NASOPHARYNX

FREDERICK A. FIGI, M.D.

ROCHESTER, MINN.

Juvenile basal fibromas of the nasopharynx comprise one of the most interesting groups of neoplasms encountered in the upper part of the respiratory tract. Their definite predilection for age and sex and their limited and comparatively inaccessible site of origin, extreme vascularity, tendency toward spontaneous regression and benign histologic structure, yet potential seriousness, render them unique among tumors of the nose and throat.

From Jan. 1, 1910, to Jan. 1, 1940, sixty-three patients having fibromas of the nasopharynx have been examined at the Mayo Clinic. In 1924 New and I¹ reported thirty-two of these cases seen between 1910 and 1923 inclusive. Thirty-one additional patients who had this condition have been encountered since 1923. The entire group of sixty-three cases includes only patients who had fibromas of the juvenile basal type. The group excludes choanal polyps, periosteal fibromas, fibrosarcomas and other forms of fibrous tumors.

Juvenile basal fibromas of the nasopharynx are rare; few reports in the literature present more than a half dozen cases seen by a single individual. A notable exception is the series of fifty-eight "nasopharyngeal fibromas" reported by Shaheen² in 1930. However, Shaheen said that he had encountered these tumors among boys 2, 4 and 7 years of age, also among men aged 48, 60 and 70 years. He noted also that he had not encountered spontaneous involution and disappear-

ance of the neoplasm after the patient had reached the age of 25 years and that he had observed carcinomatous changes in these tumors. Such statements cast considerable doubt on the probability of all his cases belonging to this classification.

The tumors under consideration occur predominantly among male patients. Data concerning some of the patients encountered prior to 1919 are incomplete and because of this only forty-five cases seen since that date are reviewed in detail here.

The tumors present a definite life cycle and a characteristic clinical appearance. They arise most commonly in the vault or high on the posterior wall of the nasopharynx from the periosteum covering the basilar process of the occipital bone and the body of the sphenoid bone but they may spring from the anterior aspect of the upper two cervical vertebrae, the internal pterygoid plate, the region of the foramen lacerum and the pterygomaxillary fossa. The mucoperiosteum lining the sphenoid sinus is also said to be a possible site of origin for the condition. Certain it is that this sinus frequently is found to be involved by neoplasm early in the course of the disease. These fibromas appear at about the age of puberty or slightly earlier than this and continue to be active until the age of approximately 20 to 25 years, at which time they tend to regress spontaneously and in some instances disappear completely.

Fibromas of the nasopharynx usually appear as hard, often almost cartilaginous, rounded, slightly nodular or lobulated, deep red, purplish or grayish tumors occupying the upper portion of the nasopharynx and often extending into one or both nasal fossae as well. Their attachment is most frequently broad, sessile and firm, so that the mass is almost immovable. At times, and especially in the case of tumors of slow growth and long duration, there is a definite pedicle, and a freely movable mass can be seen below the palatal border. Multiple secondary attachments to the pharyngeal or nasal wall may be present following unsuccessful attempts at operative removal. The intranasal prolongations of the tumor may crowd the septum against the lateral wall and they may present in the anterior naris or even protrude from the nostril. Other extensions may invade the retromaxillary fossa, antrum, orbit, ethmoid sinuses, and the sphenoid sinus and even the cranial cavity. These prolongations are said to grow most intensively where they encounter the greatest obstacles. In several of our cases a tumor arising in the nasopharynx or pterygoid fossa was bulging the cheek lateral to the tuberosity. The tumor is covered with normal mucous membrane, and tortuous vessels often stand out prominently on the surfaces. This in itself is frequently a very striking clinical feature. Ulceration is not often seen except as a result of trauma or previous therapy.

The extent of these tumors varies greatly. Although they usually spring from some point of origin situated high on the posterior wall or the vault of the nasopharynx, in our experience comparatively few of them are limited to this cavity at the time the patient reports for examination. The inherent activity of the growth, together with the stimulation induced by repeated incomplete treatment previously carried out in the majority of these cases, unquestionably were factors in such extension beyond the aforementioned cavity. The nasopharynx was involved in all forty-five cases in this series which were studied in detail, but in only eleven

From the Division of Laryngology, Oral and Plastic Surgery, the Mayo Clinic.

Read before the Section on Laryngology, Otology and Rhinology at the Ninety-First Annual Session of the American Medical Association, New York, June 12, 1940.

1. New, G. B., and Figi, F. A.: Treatment of Fibromas of the Nasopharynx: Report of Thirty-Two Cases, *Am. J. Roentgenol.* 12: 340-342 (Oct.) 1924.

2. Shaheen, H. B.: Nasopharyngeal Fibroma, *J. Laryng. & Otol.* 45: 259-264 (April) 1930.

cases were the tumors confined to this region alone. Both nasal fossae were involved in three cases, the left alone in eighteen instances and the right in thirteen.

Pressure of the expanding neoplasm often results in a remarkable degree of destruction of the bone with

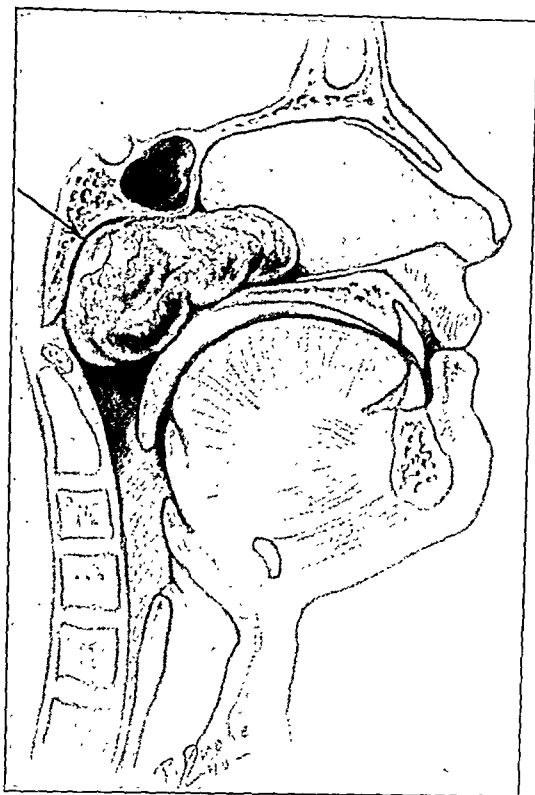


Fig. 1.—Schematic representation of fibroma of the nasopharynx and nasal fossa, with sessile attachment in the vault of the nasopharynx. The pressure of the tumor mass has destroyed a considerable portion of the basilar process of the occipital bone and of the body of the sphenoid bone.

which it comes in contact. This osseous loss appears to be the result of pressure absorption. As a result of it the tumor is able to pass readily through narrow fissures such as the lacerated foramen and even to extend directly through the base of the cranial cavity. A fatal termination at times occurs as a result of this extension. This type of destruction of bone is seen not infrequently in association with other neoplasms situated elsewhere about the head. In fact, any slow-growing encapsulated mass of soft tissue developing in contact with a bony surface is likely to produce a concavity in the bone and may actually perforate it. This phenomenon often occurs in connection with mixed tumors of the hard palate and with dermoid cysts adjacent to the orbit (fig. 1).

In the series under consideration, symptoms had been present for from one month to six years at the time of examination of the patients in the clinic. Nasal obstruction was the first symptom noted by most of the patients, although epistaxis had occurred primarily in a few instances. The female patients ranged in age from 10 to 22 years and the appearance of symptoms dated from the ages of 7 to 16 years, having been present for from one and a half to six years and averaging four years for the series. The male patients were from 10 to 30 years of age. Symptoms among the male patients had first appeared at the age of 10

to 23 years and had been present for from one month to six years, averaging a little more than one and a half years in duration. Pain was not a prominent feature in any of the cases. Marked difference in the rate of growth of the tumor was noted in different cases. Some of them, especially among younger individuals, were growing so rapidly that they appeared clinically to be malignant. The tendency toward complete spontaneous regression following partial excision mentioned by Ewing,³ who stated that this tendency also has been observed by Bensch, Grünwald, König, Bruns and Zarniko, was not encountered among the patients in this group.

Roentgenographic studies, particularly of the nasal accessory sinuses in these cases, often will furnish considerable information additional to that obtainable on physical examination alone and should be made whenever the indication presents. The tumor in the nasopharynx will as a rule be revealed best in lateral roentgenograms taken to show the upper part of the cervical region of the spinal column or the larynx. Pathologic processes are commonly present in the accessory sinuses in these cases and may be referable to direct invasion of the cavity by the neoplasm or to secondary inflammatory changes resulting from nasal obstruction and interference with drainage and ventilation (fig. 2).

Roentgenograms of the sinuses were made in forty of the forty-five cases in which detailed study was carried out. Results of these roentgenograms were negative in seven instances; the remaining thirty-three showed evidence of pathologic processes in the sinuses, nose, nasopharynx or orbit. The pathologic changes included the presence of a tumor mass in one or more of the sinuses or in the adjacent structures, diffuse



Fig. 2.—Lateral view of the upper part of the cervical portion of the spinal column, showing nasopharyngeal fibroma (indicated by arrow).

dulness of a single sinus, pansinusitis and, in a few instances, only thickened membrane. The sphenoid sinus was found to be involved in eight cases, the increased density being interpreted as a direct extension of the neoplasm in the vault of the nasopharynx. This observation always increased the hazard of treat-

3. Ewing, James: *Neoplastic Diseases*, ed. 3, Philadelphia, W. B. Saunders Company, 1928, pp. 180-182.

ment, which was invariably more protracted in these cases. The right antrum showed pathologic changes in twelve instances, the left in eighteen, although the antrums actually were invaded by the neoplasm in only seven cases. The ethmoid sinus presented roentgeno-



Fig. 3.—Anteroposterior view of the skull, showing enlargement of the right orbital fissure (indicated by arrow) resulting from a fibroma of the nasopharynx that was producing exophthalmos.

graphic evidence of involvement by the tumor in five cases and the basisphenoid bone, sella and orbit in one (fig. 3).

These tumors are primarily pure fibromas and microscopically consist of dense connective tissue. They are extremely vascular and the vessels are often cavernous in type. In addition, more or less inflammatory reaction is usually present, so that different portions of the tumor may contain inflammatory tissue, fibromyxoma or fibro-angioma. Friedberg⁴ has recently suggested that these tumors be designated "vascular fibroma" or "angiofibroma" because of their histologic structure. The lack of muscle fibers in the walls of many of the large vessels and the fact that they are enclosed in dense fibrous tissue explain the profuse and persistent bleeding encountered in these cases. Cellular portions commonly are present in the tumors and often lead to a mistaken diagnosis of fibrosarcoma. Although deposits of calcium, cartilage and bone were said by Ewing to be rare, they have been reported in a number of instances. Ringertz⁵ reported a case in which fibroma arose in the sphenoid sinus and in which the extent of the deposits of calcium led to a mistaken diagnosis of osteogenic sarcoma.

Generally speaking, biopsy should be made in all cases of neoplasm occurring about the upper part of the respiratory tract prior to the institution of treatment. Even though the diagnosis appears obvious on clinical

examination, microscopic study may reveal the presence of a pathologic process entirely different from that suspected. Fibromas of the nasopharynx provide one of the few exceptions to this generalization. The laryngologist who has seen a few of these neoplasms can as a rule recognize them rather definitely on gross observation. However, in cases in which the tumor is growing actively, especially when it is recurring following previous treatment and when inflammation is present, the clinical picture often strongly simulates a malignant neoplasm and biopsy may be absolutely necessary for differentiation. The chief objection to removal of tissue for histopathologic study is the profuse bleeding that invariably ensues after such a procedure. At times this bleeding is difficult to control and, if positive recognition is possible without microscopic examination, biopsy should be avoided. In recent years at the clinic we have not taken tissue for microscopic study in many of these cases but have based the diagnosis on the individual history, the hardness of the tumor, the age of the patient and the clinical picture. Malignant change occurring in nasopharyngeal fibromas has been reported by some observers. This has not been definitely proved, however. It seems much more likely that in such cases a fibroma apparently activated by trauma, infection or some other cause was assumed to be a sarcoma, that a mistaken diagnosis of fibroma had been made in a lesion that was primarily malignant or that the histopathologic picture was misinterpreted (fig. 4 *a* and *b*).

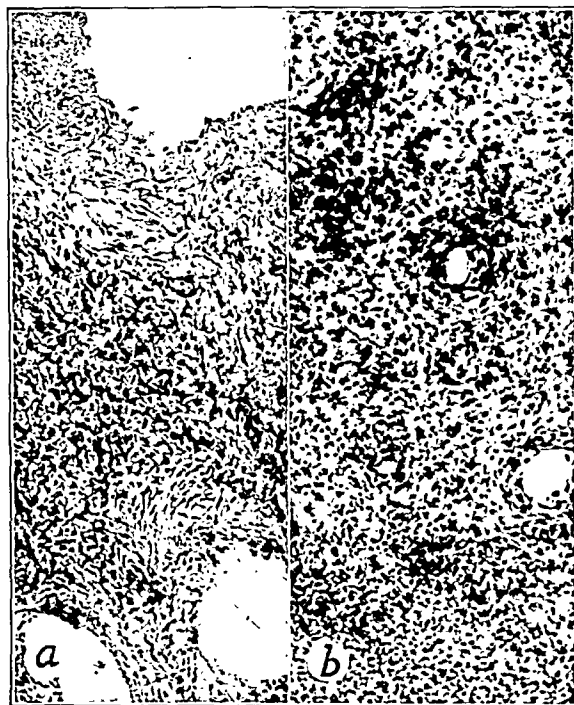


Fig. 4.—Fibroma of the nasopharynx; *a*, the tumor from which this section was made occurred in a youth 18 years of age and had produced symptoms for only two months; *b*, the tumor from which this section was made occurred in a boy 16 years of age and had produced symptoms for one and a half years. Note the marked vascularity of both neoplasms.

In the literature many types of tumors appear to have been confused with fibromas of the nasopharynx; among these, myxomatous choanal polyps which had attained considerable size, and also periosteal fibromas, fibrosarcomas and various other types of malignant

4. Friedberg, S. A.: Vascular Fibroma of the Nasopharynx (Nasopharyngeal Fibroma), *Arch. Otolaryng.* 31: 313-326 (Feb.) 1940.

5. Ringertz, Nils: Pathology of Malignant Tumors Arising in the Nasal and Paranasal Cavities and Maxilla: II. Benign Fibromatous Tumors in the Nasal and Paranasal Region and Maxilla, *Acta oto-laryng. supp.* 27: 158-162, 1938.

neoplasms. Choanal polyps must be carefully distinguished, but they should cause little difficulty in this connection for they arise in the mucous membrane of the nose and accessory sinuses, most often the antrum, and are associated with inflammatory changes in the mucosa. They may, however, present in the nasopharynx as a mass of such size that their site of origin cannot be definitely determined clinically. They are usually lighter in color, much softer and less vascular than true nasopharyngeal fibromas and are freely movable, which is in decided contrast to the majority of juvenile basal fibromas. Moreover, removal of them presents a much less serious problem than does that of pharyngeal fibromas. Periosteal fibromas may be difficult to distinguish in their clinical appearance, but they show no predilection for age or sex as do the juvenile fibromas. They usually appear as firm, grayish red, sessile, nonulcerated immobile tumors within the nose or accessory sinuses, but they may develop externally about the superior maxillae or about the nose. They spring from the periosteum or the mucoperiosteum. They are less vascular than the nasopharyngeal fibromas and their cellular structure is more mature. Although they at times show much formation of new bone they must, as Ringertz pointed out, be distinguished from true osteofibromas, which are not infrequently encountered about the superior maxillae. Intranasally they may develop on the septum or the lateral wall. Chiari⁶ reported a case in which a tumor of this type, arising in the ethmoid sinus, eroded the base of the skull and extended intracranially. This same complication apparently developed in a patient who had been examined in the Mayo Clinic and who received treatment at home. At the clinic we also encountered a tumor of this nature arising on the outer aspect of the nasal bridge in a child 4 months of age. A tumor had been present at birth and had been removed at the age of 1 month. At the time of removal of a recurrence of this neoplasm at the clinic when the patient was 15 months old the tumor measured 1 cm. in diameter. Tumors of this type were observed as being situated intranasally in two male patients aged 50 and 64 years, respectively; also in a woman 23 years of age, in two boys 13 and 19 years of age, respectively, and in several other patients. In the case of the man aged 64 the tumor had arisen within the antrum on the lateral wall, involved the nose, perforated the alveolus in the region of the tuberosity and bulged into the mouth at this point. Histopathologically it was a myxofibroma. No recurrence followed its removal with diathermy. These tumors often completely fill the antrum and by pressure absorption thin out the bony walls to the thickness of paper. In a number of instances they apparently have been reported as true nasopharyngeal fibromas. Some years ago I encountered a firm, dark red, fibrous tumor of the nasopharynx in a woman aged 60 who gave a history of nasal obstruction of two years' duration. The mass measured approximately 3 cm. in diameter and filled a large portion of the nasopharynx. On the basis of its clinical appearance it might well have been considered a true nasopharyngeal fibroma. On removal with electrocoagulation, however, it proved to be merely an extraordinarily large and firm hypertrophic tip of the inferior turbinated process.

Although fibromas of the nasopharynx tend to undergo spontaneous regression after the patient is

from 20 to 25 years old, this tendency cannot be relied on sufficiently to justify delaying therapy in these cases. A fatal termination is an ever present possibility in this condition and active treatment always should be carried out.

The treatment of nasopharyngeal fibromas at the Mayo Clinic has undergone considerable change in the past twenty-five years. Prior to 1915 surgical procedures were resorted to almost exclusively at the clinic as well as elsewhere. Experience generally with such measures was a high mortality rate and frequent recurrence, necessitating repeated operations. Many of the procedures advocated were decidedly mutilating in effect, and uncontrollable hemorrhage was at times encountered. Kobylinski,⁷ in a series of ten cases, reported three deaths caused by hemorrhage. Wojatschek⁸ reported eight cases in which operation was performed by the transpalatal or transmaxillary route. Although he had no operative mortality, several patients had recurrences and one died subsequently of the disease. Experience at the Mayo Clinic with eight cases, in five of which surgical treatment was administered during the period of 1910 to 1915 inclusive, was no more satisfactory than this, which accounted for the change in our method of treatment.

From 1916 to Jan. 1, 1924, twenty-four patients suffering from fibromas of the nasopharynx were examined in the clinic. Twenty-three were treated with radium, the treatment being applied by three methods. In the first or early instances of the condition a T shaped lead applicator with a 50 mg. tube of radium in the trough of the T was held in various positions against the tumor in the nasopharynx. The original dose usually consisted of application of a 50 mg. tube for from ten to fifteen hours. It was difficult to apply the radium accurately in this manner, and severe reaction in the adjacent structures often occurred. In two cases the palate was perforated. Such complications were later prevented by protecting the posterior surface of the palate with a retractor made of 2 mm. of sheet lead covered with a rubber finger cot, and by more accurate dosage.

In the second group of cases steel points containing radon or radium element were inserted directly into the tumor, the number of points and dosage depending on the size of the mass. In the third group emanation seeds or radon points, first of glass and later of gold, were implanted. The value of the seeds ranged from 0.5 to 1 mc., the latter having since been found to be the more satisfactory. The number of points used depended on the extent of the tumor. This type of treatment, as well as the insertion of steel points, is still used in some cases, especially to supplement other therapeutic measures. The radium treatments were repeated at intervals of from two to three months, depending on the reaction observed and the result of previous therapy. Secondary applications usually were somewhat smaller than those used primarily.

Of the forty-five patients who had fibromas of the nasopharynx who were examined at the Mayo Clinic subsequent to the beginning of 1919, three patients did not stay for treatment. For the remainder, radium therapy or electrocoagulation, either alone or combined, was employed. Since the beginning of 1924 we have

7. Kobylinski, quoted by Hellat, P.: Die sogenannten fibrösen Nasenrachenpolypen: Ort und Art ihrer Insertion und ihre Behandlung, *Arch. f. Laryng. u. Rhin.* 25: 329-344, 1911.

8. Wojatschek, W.: Ueber Polypen der Schädelbasis, *Ztschr. f. Hals-, Nasen- u. Ohrenh.* 7: 88-97, 1923.

6. Chiari, quoted by Ringertz.³

used surgical diathermy with increasing frequency in the treatment of these tumors and in most instances it has been supplemented with radium. Of the forty-two patients treated, twenty-two received radium therapy alone, seventeen diathermy combined with radium, two electrocoagulation alone, and one roentgen therapy. The patients treated exclusively with radium received an average of six applications, counting implantation of radon points or steel points or the use of an applicator as separate from radium packs, even though this intranasal or intrapharyngeal therapy was used at the same time as external treatment. Steel points were implanted into the tumor in thirty-four cases and radon seeds in eleven. Radium tubes were applied directly in contact with the tumor in the nasopharynx by means of an applicator in sixteen cases. Radium packs were employed in eight. The one patient for whom roentgen therapy was used was hemophiliac. Among the patients in whom the tumor was treated with electrocoagulation primarily, an average of two applications of radium including the one used at the time of coagulation were given. Almost without exception, implantation of steel points or of radon seeds was used in these cases. The nineteen patients who were treated with electrocoagulation received only one application in twelve instances, two in five and three in two.

The length of time that patients were under treatment varied from two months to six and a half years among those for whom radium and diathermy were employed and from six months to four and a half years for those treated with radium. Two patients in the group in which electrocoagulation was used had unusually large and active tumors that proved to be very resistant to therapy. Both of these patients lived a considerable distance from the clinic and it was impossible for them to return at regular intervals. In addition, the sphenoid sinus was extensively involved in one of the patients and the antrum, cheek, pterygomaxillary fossa and orbit, as well as the nasopharynx and the nasal fossa, in the other. The former of these patients was under treatment for four and a half years, the latter for six and a half years. Following electrocoagulation and implantation of radium on one occasion in this latter patient, septic meningitis developed with loss of consciousness, hemiplegia and a polymorphonuclear cell count in the spinal fluid as high as 1,152. For some time it was thought that a fatal termination was inevitable, but the patient gradually recovered and with one subsequent insertion of radium the tumor entirely disappeared, leaving no residuum. It is questionable whether any other form of therapy would have eradicated the neoplasm in these two patients in a shorter period. With the exception of these two instances, the average length of time the patients receiving diathermy and radium combined were under treatment averaged ten months. Two patients for whom electrocoagulation alone was employed each were cured in four months. The patients receiving radium therapy alone were under treatment an average of 18.6 months. It seems certain, however, that the time required to eradicate these tumors with irradiation might have been shortened materially if the patients had been able to return at regular intervals for treatment. Implanted radium was more effective than radium applied to the surface of the tumor or externally in the form of radium packs.

Electrocoagulation often will entirely eradicate tumors of the type under consideration in a single sitting, a result which is rarely accomplished with radium, but

electrocoagulation does involve a greater hazard than does irradiation. Profuse hemorrhage is frequently encountered when surgical diathermy is being used in these cases and in some instances hemorrhage is so active that it cannot be controlled by the coagulating process, and electrocoagulation cannot progress because of it. In a few such instances in this series it was necessary to discontinue electrocoagulation and to insert a firm pack into the anterior portion of the nares, and also postnasally, to stop the bleeding. In a few of these cases ligation of the external carotid artery was required on removal of the nasal pack a few days later or on separation of the slough at the end of from ten days to two weeks. In two instances treated early in the series perforation of the hard palate developed following the use of diathermy combined with radium. This complication might well have been obviated had an attempt not been made to eradicate these tumors in a single sitting. In fact, the end results in these cases have been equally satisfactory and fewer complications have been encountered when less intensive electrocoagulation and irradiation have been employed primarily and the treatment has been repeated on one or more occasions subsequently. Atrophy of the mucous membrane of the nose and nasopharynx occurs almost invariably following treatment of fibromas in these situations with either radium or surgical diathermy. Such atrophy is always more pronounced after irradiation, however, and the associated foul crusting frequently causes severe periodic hemorrhages later. The crusting and dryness of the mucosa incident to the atrophy can be controlled to a great extent and often entirely eliminated by increasing the patient's intake of fluids, by the daily administration of iodides and by the frequent use of a liquid petrolatum nose and throat spray. Although such atrophy does not result from avulsion or sharp excision of these tumors, the greater hazard of the latter procedures renders them inadvisable in many of these cases. Sancho and Ferrer⁹ in 1929 reported five cases of nasopharyngeal fibroma in which the lesions ranged in size from that of a walnut to that sufficient to fill the nasopharynx and most of one nasal fossa; these tumors were removed by avulsion without mortality. The snare was introduced through the nostril. Although this procedure might have been carried out in a few of our cases, it would not have been feasible in the great majority of them because of the large size, multiple attachments, broad sessile base and extreme vascularity of the tumors. The possibility of engaging the majority of these tumors in a snare is wholly inconceivable; the fact that many of them were recurring following previous treatment unquestionably was an important factor in this. Villoria¹⁰ has recently reported three cases of fibroma of the nasopharynx in which surgical removal was carried out through a Moure transmaxillonasal approach following preliminary laryngotomy. The surgical procedure was supplemented with irradiation.

In using surgical diathermy for fibromas of the nasopharynx and nasal fossae, the electrode usually is inserted through both the nostril and the mouth. A vulcanite nasal speculum is used when approach is made through the nose, in order to avoid injury to the nostril. For coagulation of that portion of the

9. Sancho, R. V., and Ferrer, E. A.: Estudio anatómico, clínico y terapéutico de los fibromas nasofaríngeos, *An. d. Hosp. de l. Santa Cruz y San Pablo* 3: 255-264 (Sept. 15) 1929.

10. Villoria, L. L.: Fibromas naso-faríngeos (fibromas sangrantes de la pueria masculina), *Tipografía Americana*, 1940.

tumor which is situated in the nasopharynx, the soft palate is retracted by means of a rubber catheter introduced through one nostril and brought out through the mouth. Additional protection to the soft palate is afforded by means of a flat piece of vulcanite or some other nonconductor threaded over one of these catheters and drawn back up between the posterior surface of the soft palate and the tumor. The electrode which is introduced through the mouth is insulated, except for a few millimeters at its tip, with a coat of duco cement or it is covered with a rubber catheter. The distal 2 or 2.5 cm. of this electrode is bent upward at a right angle to permit contact with the tumor (fig. 5). During the actual coagulation the point of the electrode and the tumor in the nasopharynx are observed by means of a nasopharyngeal mirror and an insulated suction tip is held adjacent to the region of electrocoagulation to remove blood, mucus and steam, to prevent excessive scalding of the normal tissue and to keep the mirror from fogging too rapidly. Intra-

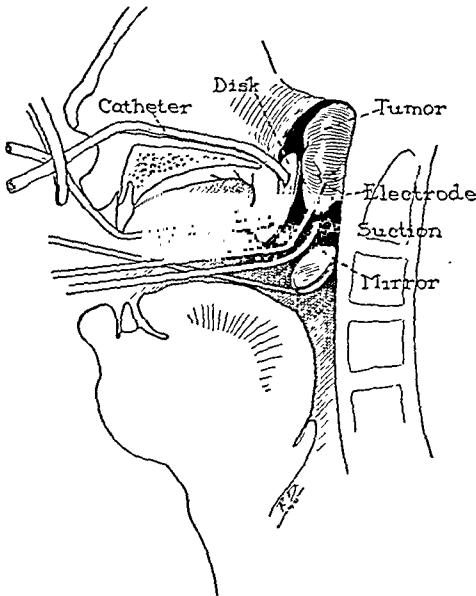


Fig. 5.—Technic of electrocoagulation of a nasopharyngeal fibroma: A rubber catheter introduced through the nostril and brought out through the mouth retracts the palate, thereby rendering the tumor more accessible, while a vulcanite disk threaded over the catheter protects the nasal surface of the palate. A suction tube is held adjacent to the point of the insulated electrode during electrocoagulation.

tracheal anesthesia usually is employed, the tracheal tube being introduced through the mouth. This permits of placing a gauze pack firmly in the hypopharynx so that the possibility of blood gravitating into the larynx and trachea is obviated. The portion of the tracheal tube which is situated in the pharynx tends partially to obstruct the surgeon's view of the nasopharynx, but this type of anesthesia is much safer in these cases than colonic or intravenous anesthesia. In the few instances in which it was impossible to make progress with electrocoagulation because of extreme vascularity, surgical diathermy was discontinued and radium points were inserted into the tumor.

The results of treatment of fibromas of the nasopharynx at the Mayo Clinic with radium and electrocoagulation either alone or combined have been very gratifying. There has been no mortality in these cases to date and all the patients who have received the therapy either have been cured or are well on their way to complete recovery. One patient, a boy, who

came in three years prior to the time of this writing at the age of 13 years suffering from an extensive fibroma which involved the retromaxillary fossa, right side of the nose, nasopharynx, sphenoid sinus and orbit and which bulged the cheek, still presents increased density in roentgenograms of the sphenoid region. There is no clinical evidence of the neoplasm aside from this roentgenologic density, and the patient has no symptoms. Two patients in whom such tumors had almost disappeared at the time they were last observed nine and a half and thirteen years prior to the time of writing, respectively, have not been heard from since. It would seem likely that these patients have recovered. One patient for whom diathermy and radium were used on two occasions began to suffer from a recurrence fifteen months after the last treatment. Because of the great distance from the clinic at which this patient lived, he was unable to return but when last heard from apparently was progressing satisfactorily under radium therapy at home. Another patient who had received a single radium treatment wrote that a portion of the tumor was still present in the nasopharynx, but he did not mention symptoms associated with this condition. These results contrast strikingly with the experience of most laryngologists in dealing with tumors of this type by surgical measures.

It is interesting to note the age of these patients at the time of complete disappearance of their nasopharyngeal fibromas. Actually this point is the crux in determining the efficacy of therapeutic measures in these cases, since the tumors tend to undergo spontaneous regression after the patient reaches the age of approximately 25 years. Five of the patients had attained the age of from 20 to 24 years at the time treatment with radium was commenced, whereas eight in this group of twenty-two patients treated in this manner were 20 years or more of age at the time of complete disappearance of the tumor. Only one patient of the twenty-two was more than 25 years of age when cured; this patient was 24 years old at the time treatment was started and 26 years when cured. Among nineteen patients treated with electrocoagulation and radium, three were from 21 to 25 years of age at the time this procedure was initiated. Five patients (26 per cent) in the group had attained the age of 20 to 25 years at the time of complete disappearance of the tumor; 73 per cent were less than 20 years of age; 63 per cent of those treated exclusively with radium were less than 20 years of age when cured.

Although these tumors are benign, the improvement in the patient's general health that commonly follows eradication of the mass is often as striking as that noted after removal of a large infected malignant neoplasm. A gain in weight of from 15 to 20 pounds (7 to 9 Kg.) within the course of a few months is not unusual. One girl in this series, 14 years of age, gained 35 pounds (16 Kg.) in four months. Frequently a similar period of time will result in the patient's being transformed from an asthenic, pale, anemic individual into a robust person of normal vigor and vitality. The change of course occurs more promptly if the tumor is eradicated with a minimal loss of blood, but it has been seen in cases in which severe hemorrhage occurred postoperatively. It is accounted for by control of the frequent hemorrhages to which the patients have been subject, clearing the foul, fetid nasal discharge and recession of the associated inflammatory process and restoration of the nasal airway and of the patient's appetite.

SUMMARY AND CONCLUSIONS

Sixty-three cases of juvenile basal fibroma of the nasopharynx observed at the Mayo Clinic were studied. Fifty-eight of the tumors occurred in male patients; five were present in female patients. The patients ranged in age from 10 to 31 years at the time of examination. The nasopharynx was involved in all the forty-five cases studied in detail, the nasal fossae in thirty-four. The antrum, sphenoid and other accessory sinuses were invaded in a number of instances. Removal of tissue from these tumors is always attended by profuse bleeding and in some of the more recent instances of the condition biopsy was not performed, the diagnosis being based on the history, the age of the patient, the hardness of the tumor and the characteristic clinical picture. Surgical removal of these tumors involves considerable risk, and recurrences are frequent. Implants of radium and electrocoagulation supplemented with radium are the most effective forms of treatment in these cases. By means of electrocoagulation and insertion of radium a tumor of this type can at times be eradicated with a single application, but fewer complications are likely to be encountered if treatment is carried out in stages. There was no mortality in the series. All the patients who received complete therapy are now well except for a boy, 16 years of age, who is still under treatment at the time of writing.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. FIGI AND HILL

DR. JOSEPH D. KELLY, New York: Examination of the nasopharynx is not easy at the best; however, it must be done in all questionable cases. I do not believe there is any one method of examination which can be considered complete. Dr. Hill seems to think that we have overlooked the possibilities of the Yankauer boot. The use of the Yankauer boot is not easy and the field of vision is limited. It is necessary to anesthetize the pharynx and nasopharynx, and even then, in sensitive patients, retching is not obviated. The Yankauer is an excellent instrument for the examination of localized areas, such as the fossa of Rosenmüller and the posterosuperior lateral pharyngeal wall. The palate retractor alone gives a fair view of the lower half of the posterior nasopharynx, and this instrument, with a good sized nasopharyngeal mirror, is an excellent procedure. But let us not lose sight of the nasopharyngoscope. I think one should have two sizes to accommodate the large or the small nose or the noses of patients having nasal obstruction. The use of the nasopharyngoscope is simple and gives a fund of information with the least discomfort to the patient. Also one may treat the nasopharynx with the aid of the nasopharyngoscope more readily than by any other method. Aside from the methods of examination, the most important thing is the knowledge and experience of the examiner. If the examiner does not recognize the normal he will not appreciate the abnormal, and the examination is useless. I think that we will all agree that we do not have to fear the specialist who says "I don't know," but we must give a wide berth to the fellow who thinks he knows and does not know. Dr. Figi is to be congratulated on giving us a most complete paper and the data on one of the largest, if not the largest, series of nasofibromas of the nasopharynx, and he has brought out very definitely the characteristics of these tumors, such as the fact that they predominate in male patients—twelve males to one female. The main impression that Dr. Figi leaves is that the surgical treatment of nasofibromas is something of the past and that the safest way and surest way of effecting a cure is a combination of radium and electrocoagulation.

DR. CHARLES J. IMPERATORI, New York: Among the methods stated by Dr. Hill, he included that of palpation of the nasopharynx. Definitely, that is a most important method but most of the time we use our nail and not the ball of the finger. Just

recall how you examine the nasopharynx. The index finger is placed in the nasopharynx with the ball of the finger anteriorly and the nail in contact with the pharyngeal wall. Instead, turn your finger around and apply the ball of the finger. The Hassinger or modification of a White palate retractor, I have found, is an extraordinarily good instrument in the examination of the nasopharynx but the Coakley tonsil probe will give almost as much information. The use of a Frankel tongue depressor and a tilting mirror, a No. 2 or No. 3, will give a great degree of information. Most patients can be examined by this method, possibly 60 per cent. With the other 40 per cent, one must use the nasopharyngoscope. There are many men who never use the tilting mirror or postnasal mirror but depend entirely on the use of the nasopharyngoscope. The use of the Hayes pharyngoscope or the modification of the Hayes-Beck instrument introduced into the mouth gives one a great degree of information in the nasopharynx. Then there is the method that I have designated as anteroposterior rhinoscopy, which consists of looking through the nose, into the pharynx, after having shrunk the tissues. That should be a routine practice in the examination by all otolaryngologists, especially at the first examination. This procedure is attained only by understanding how to focus the head mirror. The cone of light must be focused on the pharyngeal mucosa. One assists oneself somewhat by having the patient say "H," in other words raise the soft palate, and frequently one can see a light reflex, depending, of course, entirely on the amount of shrinkage that has occurred. I use a shrinking solution containing 1 per cent cocaine and 1:5,000 epinephrine. The use of lateral roentgenograms and this new method of laminography I think is going to help a great deal in outlining tumors in the nasopharynx. To discuss Dr. Figi's paper is almost like bringing coals to Newcastle. A report of forty-five case histories represents a very large experience in this particular condition. Definitely he has pointed out that there are two methods of arriving at the diagnosis: the clinical history and the physical examination. The clinical history usually is as follows: a male at puberty, disturbance of the hearing and nasal obstruction, disturbance of nutrition, loss of appetite, spontaneous epistaxis and frequently the appearance of considerable loss of mentality because of the interference with breathing and the blocking of the posterior choana. In the method of arriving at the diagnosis, the new growth is determined by physical means entirely and not by biopsy.

DR. GORDON B. NEW, Rochester, Minn.: Dr. Hill has done an excellent job in calling to our attention the necessity of a careful examination of the nasopharynx. Of all the lesions seen in this region, the malignant ones seem to be of most importance from a diagnostic standpoint. Eighteen years ago before this section I reported seventy-nine cases of malignant tumors of the nasopharynx examined in the previous six years, bringing out the fact that the symptoms these tumors present are not generally known and that the percentage of these tumors which produce symptoms referable to the nose and throat is comparatively small. Since then, from 1922 to 1936 inclusive, we have seen at the Mayo Clinic approximately 500 malignant tumors of the nasopharynx and during this period have been further impressed with the necessity for a careful examination in this region and the fact that many indeterminate diagnoses are cleared up by the finding of a malignant tumor. Of the seventy-nine cases reported in 1922 there were twenty-one presenting symptoms referable to the eye, twenty-nine referable to the ear, thirty-eight referable to the nose and pharynx, fifty-one referable to the glands of the neck, four referable to involvement of the gasserian ganglion, two referable to involvement of the jugular foramen and the nerves that pass through it, and eleven symptoms referable to intracranial involvement. Patients with malignant lesions of the nasopharynx frequently consult the ophthalmologist on account of external rectus palsy or ptosis, the neurologist on account of pain in the fifth nerve or the symptoms of intracranial involvement, the otologist on account of pain in the ear or discharge, the medical consultant regarding the presence of a gland in the neck of an indeterminate origin, or the dentist on account of the possibility of a wisdom tooth being a factor in the pain. It is possible in patients with pain in the face and ear or involvement of one or many of the cranial nerves to clear up an indeterminate diagnosis by finding a small

epithelioma of the nasopharynx. The results of treatment in these cases are much better than is generally thought. Radiation used externally and directly into the nasopharynx is the best method of treatment, and some patients are alive and well five and ten years following treatment. Dr. Figi has reported results of treatment of sixty-three patients with fibromas of the nasopharynx. As he has outlined, the use of surgical diathermy and radium gets these patients well with the least risk. In the treatment of most tumors it is essential that the tumor be entirely removed at one time. In the treatment of this particular type of tumor, that is a fibroma, the best results are obtained with the least risk by removing them in stages.

DR. E. P. FOWLER JR., New York: I didn't intend to discuss this paper, but since Dr. Kelly gave me credit for some one else's case I thought I ought to straighten the matter out. The case described was Dr. Morris Heller's. He was responsible for the successful diagnosis; I merely observed the case. I should like to ask Dr. Figi whether he uses only inhalation anesthesia for these cases, whether he is afraid of explosions from his diathermy and whether he ever uses intravenous anesthesia. I should like to leave two thoughts that were given to us by Dr. Coakley when he was discussing nasopharyngeal pathology with his interns. Dr. Coakley suggested that a probe be placed in the nose and the distance to the nasopharynx measured. If it is deeper on one side than the other, or something can be pushed around, one can be pretty sure of a tumor. Another dictum was "Always do a biopsy on a unilateral adenoid."

DR. FREDERICK T. HILL, Waterville, Maine: I will agree, of course, with Dr. Kelly. I tried to bring it out in the paper that all methods of examination should be used to arrive at a diagnosis; that one method would help the other in visualizing the region. It is so difficult to get a complete view of the nasopharynx that every method which will bring into view any part of the nasopharynx should be utilized, forming something of a composite picture. I am glad he mentioned the two sizes of nasopharyngoscopes. They are very useful. With any tumor in the neck one should keep in mind the possibility of a malignant nasopharyngeal growth. It is somewhat unfortunate that, at least with these Schmincke tumors in the nasopharynx, we may get what seems for a time to be satisfactory results but most of them go bad in about two years. Dr. Imperatori mentioned palpation. In my paper, which I didn't have time to read in full, I referred to palpation as a method of diagnosis. While we use it, it tells us comparatively little beyond the firmness of the tumor mass. I feel that it is advisable in examining a young infant for the presence of adenoids to retract the soft palate. It gives us more information. There is one thing about the shrinking of the nose for anterior examination. Cocaine and epinephrine are used in a rather routine manner, but once in a while we have a patient who has quite an idiosyncrasy to epinephrine and it may prove quite unpleasant. After it was used on my own nose, and I sneezed steadily for days, I discontinued using epinephrine. I think it is a great privilege to have Dr. New come into this discussion with his experience of 500 cases of tumor of the pharynx.

DR. FREDERICK A. FIGI, Rochester, Minn.: The discussers have been very generous. Answering Dr. Kelly's question concerning the opportune time for using radium in these cases, we usually insert radium needles or gold radon points immediately following the electrocoagulation, although they may be employed at any time either preceding or following the operation. As a rule it is necessary to use radium on one or more occasions following the initial application. Concerning the anesthesia that Dr. Fowler inquires about, intratracheal, ether, nitrous oxide and carbon dioxide are usually employed. The patient is anesthetized primarily with nitrous oxide and ether and is carried largely with a combination of nitrous oxide and carbon dioxide. During actual electrocoagulation the ether must, of course, be discontinued. There is apparently little danger of an explosion if the ether is discontinued, the gauze pack in the hypopharynx changed, the patient permitted to take a few deep breaths and the gas machine flushed with carbon dioxide before electrocoagulation is proceeded with. Intravenous sodium pentothal has been employed in a few instances.

CUTANEOUS MANIFESTATION FROM TOBACCO

WITH SPECIAL REFERENCE TO ARSENICAL
EXFOLIATIVE DERMATITIS

E. E. BARKSDALE, M.D.
DANVILLE, VA.

My purpose in this paper is to call attention to another possible source of arsenic poisoning, namely tobacco. All of the tobacco on the American market contains arsenic in a form which may be taken up by the human body.

For years farmers have been using lead arsenate as an insecticide on tobacco to kill the horn worm. Nothing is done during the agricultural or manufacturing process to remove it. Probably nothing can be done.

Usually when any worker attempts to tie up a manufacturing process in which large amounts of money are involved with human diseases, a great furor is raised. This is not my intention.

Lead arsenate is essential to the tobacco industry. It should be considered as an industrial hazard. Farmers use it as an insecticide because it is the most efficient and inexpensive one available. Indeed, its efficiency is probably responsible for the fact that it remains on the tobacco when it reaches the consumer. It has the property of sticking to the tobacco. This is the reason why it is so effective. Remaining on it throughout, it kills the young worms as they are hatched. It is impossible to wash it off because in so doing the tobacco would be ruined. There is no chemical process known that will remove it.

For the past several years the United States Department of Agriculture has not recommended lead arsenate as an insecticide. Instead it recommends a preparation called cryolite. Farmers will not use this, first, because it is a little more expensive and, second, because it is much more difficult to use. It has to be applied to each individual plant. On the other hand, lead arsenate is effective in the hands of inexperienced labor. In fact, if it is thrown up in the air and blown across the field it will do just as well.

Remington¹ in 1927 reported that tobacco contained arsenic. He also stated that "the habitual user of tobacco is in daily contact with appreciable amounts of arsenic" and concluded that "the possibility of chronic arsenic poisoning from the use of tobacco is not to be dismissed without more evidence." Gross and Nelson,² of the United States Department of Agriculture, reported in 1934 that tobacco smoke contained arsenic. Drs. C. N. Myers and Binford Throne concluded from their work that arsenic was a factor of great importance in about 30 per cent of cases of eczema. They attributed the arsenic to the increased use of arsenate spray for the destruction of insects.

Consumers Research in 1938 analyzed five brands of cigarets and reported the arsenic content to be too high for safety to the heavy smoker.

The United States Pure Food Laws allow only 1.43 parts per million for arsenic. Zeidler and Wagner

Miss Louise Jakeman, Miss Margaret Tatum and Dr. C. W. Purcell, of Danville, Va., gave valuable aid and suggestions in this experiment.
Read before the Section on Dermatology and Syphilology at the Ninety-First Annual Session of the American Medical Association, New York, June 14, 1940.
1. Remington, R. E.: J. Am. Chem. Soc. 49: 1410, 1927.
2. Gross, C. R., and Nelson, O. A.: Am. J. Pub. Health 24: 36 (Jan.) 1934.

reported in 1937 that the arsenic content of tobacco was fifty times that allowed in foods.

It is only fair to note that no user of tobacco could possibly consume all the arsenic present. The spray is frequently used on vegetables and fruits, but they are usually washed before eating. The average person's diet does not consist of these entirely, but the user of tobacco is in constant contact with arsenic.

This paper will present an analysis of cigarettes, cigars, snuff, chewing tobacco and smoking tobacco, purchased on the open market, and show that they all contain arsenic. It will also demonstrate that cigaret smoke contains arsenic in a form which may be taken up by the human body. It will present a series of cases of arsenical exfoliative dermatitis believed to be due to tobacco. A series of control cases will also be presented. It will attempt to show that the arsenic in tobacco has a very detrimental effect on the patient under anti-syphilitic treatment who happens to get a postarsphenamine dermatitis.

PROCEDURE

The Gutzeit test for arsenic has been used entirely in this experiment. The blood determinations have been made on 5 cc. of citrated blood. The tobacco tested that did not contain arsenic was obtained from a farmer who was known not to have used lead arsenate on his crop.

"Bakers analyzed" chemicals with a low arsenic content have been used throughout. Also control tests with the chemicals have been made on each analysis.

Figure 1 is the diagram of a mechanical smoker used for the determination of arsenic in cigaret smoke. It consists simply of two large test tubes connected by glass and rubber tubing and attached to a suction apparatus. A cigaret holder in one end was used to hold the cigaret that was being smoked. Distilled water was used as a solvent in both tubes. The water was analyzed for arsenic after ten, twenty, thirty and forty cigarettes of each of the five brands tested had been smoked. It is of importance to note here that the figures obtained from the analysis for arsenic from the mechanical smoker would not necessarily apply to the

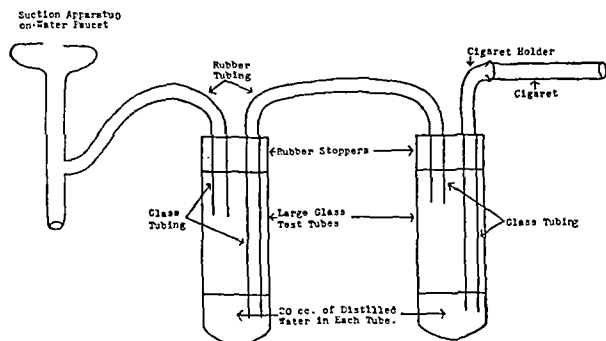


Fig. 1.—Diagram of mechanical smoker used to show that cigaret smoke contains arsenic: The suction apparatus is turned on. The cigaret is then placed in the holder and lighted. The smoke is allowed to bubble through the distilled water in both tubes. The distilled water is analyzed for arsenic after ten, twenty, thirty and forty cigarettes of each of the five brands tested have been smoked.

human being. The mechanical smoker smoked each cigaret continuously. The human being does not do this.

RESULTS OF TOBACCO ANALYSIS

Table 1 shows the amount of arsenic found in the various types of tobacco. A control test was made on tobacco obtained from a farmer who had used no insecticide. It was negative for arsenic.

The arsenic content of the five brands of cigarettes tested was practically the same. One cigaret might show more arsenic than another but when the average is taken the figures are more or less constant.

In discussing this matter of arsenic with various research chemists of the tobacco companies I find that they have known for years that tobacco contained arsenic. They have more accurate analysis than I have,

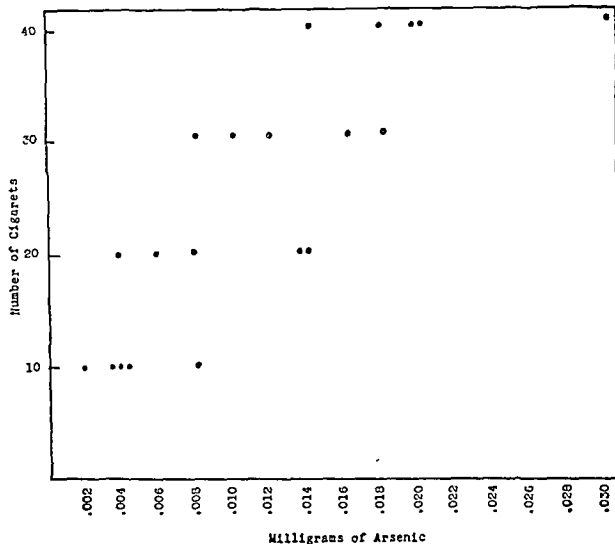


Fig. 2.—Graph showing that arsenic content of distilled water of the mechanical smoker is in proportion to the number of cigarettes smoked.

but they tell me that these figures are approximately correct. They also say that lead arsenate is more or less used throughout where American tobacco is raised. I was told by one chemist that Turkish tobacco could be washed, which cannot be done with the domestic weed.

Table 2 shows the amount of arsenic found in the distilled water of the mechanical smoker after it had smoked ten, twenty, thirty and forty cigarettes of each of the five brands tested. The analysis of the smoke from twenty cigarettes of brand 2 was checked by Dr. W. E. Bray of the University of Virginia, who reported 0.0112 mg. of arsenic. The smoke from twenty cigarettes made of tobacco on which no lead arsenate had been used was negative for arsenic.

Figure 2 shows that the arsenic content of the distilled water of the mechanical smoker increased in proportion to the number of cigarettes smoked. All these figures are probably higher than the actual amount of arsenic consumed by the smoker. It is reasonable to conclude that the more one smokes the more arsenic one's body takes up. The distilled water was purposely used as a solvent in the mechanical smoker because it is the simplest one available.

CASES OF ARSENICAL DERMATITIS

Table 3 is a summary of the cases of arsenical dermatitis thought to be due to tobacco. Because of the lack of space these cases cannot be reported in detail, so only the pertinent facts in relation to each will be mentioned.

All of these cases showed either a positive blood or urine arsenic. Clinically, it can be said that the dermatitis could have been due to arsenic. In none of them was it possible to determine any source of arsenic other than tobacco. In some of these cases intravenous injections of calcium thiosulfate, along with mild sooth-

ing ointments and baths, were used, which is believed not to have had an appreciable effect. All the patients were emphatically cautioned against the use of tobacco and they recovered and have remained so since. Three of them have had mild recurrences every time they used tobacco.

TABLE 1.—Amount of Arsenic in Tobacco

Type of Tobacco	Milligrams of Arsenic				
	Brand 1 0.0426 mg. per cigaret	Brand 2 0.0465 mg. per cigaret	Brand 3 0.0420 mg. per cigaret	Brand 4 0.0365 mg. per cigaret	Brand 5 0.0495 mg. per cigaret
Cigarets *.....					
Cigars.....	Brand 1 0.08 mg. per cigar	Brand 2 0.088 mg. per cigar			
Snuff.....	2.60 mg. of arsenic per 100 Gm. of snuff				
Chewing tobacco..	1.60 mg. of arsenic per 100 Gm. of tobacco				
Smoking tobacco..	4.00 mg. of arsenic per 100 Gm. of tobacco				
Control tobacco†..	Negative for arsenic				

* Each figure represents the average analysis of from 5 to 8 cigarettes on each brand.
† This is cured tobacco obtained from a farmer who had used no insecticide (lead arsenate) on his crop.

Patient 3 is of especial interest because he was the first one seen and also because he made his own diagnosis. When he first came in he stated that he believed his condition was due to smoking. At that time I tried to convince him that I did not think tobacco was responsible. It was several months later that another similar case was seen and the original one recalled. He was then asked to return to the office and a more detailed history was obtained. He stated that the more he smoked the worse the cutaneous condition became. He had also made the observation that he could smoke cigarettes that he himself made of tobacco on which no lead arsenate had been used. When asked if he used lead arsenate on his own tobacco, he said that he had not done so for a good many years because when he did it made him sick and also caused his skin to break out and itch as it does now. This patient still had his dermatitis when seen at the second visit. He was also smoking. His blood arsenic was positive. He was asked to refrain from the use of tobacco entirely and within

TABLE 2.—Amount of Arsenic Found in the Smoke of Five Popular Brands of Cigarets

Cigaret	Number of Cigarets Smoked			
	10	20	30	40
Brand 1.....	0.004 mg.	0.006 mg.	0.008 mg.	0.014 mg.
Brand 2.....	0.008 mg.	0.014 mg.	0.010 mg.	0.020 mg.
Brand 3.....	0.004 mg.	0.014 mg.	0.018 mg.	0.020 mg.
Brand 4.....	0.002 mg.	0.008 mg.	0.012 mg.	0.018 mg.
Brand 5.....	0.004 mg.	0.004 mg.	0.016 mg.	0.020 mg.

Analysis of the smoke from twenty cigarettes of brand 2 was checked by Dr. W. E. Bray of the University of Virginia, who reported 0.0112 mg. of arsenic. The smoke from twenty cigarettes made of tobacco on which no insecticide (lead arsenate) had been used was negative for arsenic.

three weeks he was well. He has since been able to smoke continuously cigarettes made of his own tobacco on which no insecticide had been used.

There are two cases reported as mild, by which I mean a generalized dry skin with only slight exfoliation and slight redness. The symptom of itching brought these patients to the office rather than their anxiety over the dermatitis. The eruption was of comparatively short duration.

There are four cases reported as moderate. Itching and erythema of the skin were present in all. The type of eruption was the one frequently seen following the injection of an arsenical.

There are two cases reported as severe. In both there was a generalized erythema of the skin with marked exfoliation. It is a type which is frequently seen in a patient under antisyphilitic therapy when the attending physician does not stop the arsenical as soon as the dermatitis starts.

CONTROL CASES

Table 4 shows that the blood of six patients who had severe dermatoses, all smokers, was analyzed for arsenic and found to be normal. The reason for this is to attempt to prove that arsenic is not retained in the blood as a result of impaired secretion from a severe dermatitis, but that when the blood test does show arsenic it can be relied on to indicate the etiologic agent. The blood of three moderate smokers and three heavy smokers, all apparently normal physically, has been analyzed for arsenic and found to be negative.

Case 1 deserves some mention because it was seen about the same time as the investigation on the two original cases was being made. It almost made me give up the whole idea. The patient came in with a severe

TABLE 3.—Cases of Arsenical Dermatitis

Case	Degree of Cutaneous Involvement	Blood Arsenic, Mg. per 100 Cc.	Urine Arsenic, Mg. per 100 Cc.	Progress of Case	Source of Arsenic	Final Blood Arsenic
1. R. W. C.	Severe	0.002	0.06	Well	Cigarets	Negative
2. R. H. D.	Severe	0.125	.....	Well	Cigarets	Negative
3. C. T. C.	Moderate	0.240	.....	Well	Cigarets	
4. L. R.	Moderate	0.020	.....	Well	Snuff	Negative
5. L. J. H.	Mild	Negative	0.002	Well	Cigarets	
6. W. N. V.	Moderate	0.040	.....	Well	Cigarets	
7. H. H. E.	Moderate	0.006	.....	Well	Pipe and chewing tobacco	
8. E. S. S.	Mild	0.000	.....	Well	Cigarets	Negative

exfoliative dermatitis which from its appearance was surely thought to be arsenical. Repeated blood tests were negative for arsenic. The patient used snuff freely. After several weeks it was decided that there must be some other cause. The history was obtained that she had been taking a drug for high blood pressure. Communication with her physician determined this drug to be sodium thiocyanate. She responded when the drug was removed. About six months later she went to another physician for treatment of her hypertension and he, not knowing about her sensitivity to the drug, placed her on it again. She immediately broke out in the same manner as previously. She again responded after the drug had been stopped. She had a positive patch test to sodium thiocyanate and a negative patch test to lead arsenate.

EFFECT OF TOBACCO ON POSTARSPHENAMINE DERMATITIS

Table 5 shows a series of four cases of dermatitis following neoarsphenamine in which it is thought that tobacco has been detrimental to the recovery. From the history and my own observations it is believed that the antisyphilitic drug was stopped immediately on the first sign of skin involvement.

Patient 1 was referred because of a slight itching following the sixth injection of neoarsphenamine. Both the physician and the patient stated that there had been no untoward reaction previously. In spite of this fact,

the man's condition rapidly became worse and it was only after six weeks of observation, when the patient's condition had reached the point where it was thought that he was going to die, that tobacco was discontinued. In less than one month's time he was well.

Patient 2 was a colored girl who had a mild cutaneous rash following the third injection of neoarsphenamine. The treatment was discontinued and in about three weeks' time her skin was entirely normal. She was then lost track of and was not seen again for eight months, at which time she had a moderately severe exfoliative dermatitis of three weeks' duration. She had had no further antisyphilitic treatment of any kind, but for three months previous to this recurrence she had been using snuff. Her blood was positive for arsenic. She had a positive patch test to 1:10,000 solution of neoarsphenamine and lead arsenate. The snuff was discontinued and in six weeks her skin was apparently normal.

Patient 3 is a colored man who was under observation in the clinic. He had a mild dermatitis following the third injection of neoarsphenamine. The drug was stopped immediately. He had had no previous itching. He was told to discontinue the use of tobacco, but he did not. He was not seen until two months later, at which time he had a severe exfoliative dermatitis. He was immediately hospitalized and for the past three months his condition has been gradually improving. However, although at the present time he is very much better he still shows a slight trace of arsenic in

the fact that she had received a total of only 0.4 Gm. of neoarsphenamine, her condition progressed. She died with what is now believed to have been a condition due to arsenic in tobacco. It is thought that no person who gets a postarsphenamine dermatitis should use tobacco.

TABLE 5.—Tobacco and Postarsphenamine Dermatitis

Case	Diagnosis	Initial Blood Arsenic, Mg. per 100 Cc.	Final Blood Arsenic, Mg. per 100 Cc.	Comment
1. J. F.	Arsenical dermatitis	0.040	Negative	Cutaneous condition progressed until tobacco was stopped
2. M. H.	Arsenical dermatitis	0.080	Negative	Arsenical dermatitis healed; recurred with snuff habit
3. C. W.	Arsenical dermatitis	0.020	0.006	Cutaneous condition progressed until tobacco was stopped
4. A. S.	Arsenical dermatitis	Not done	Not done	Patient died in 1936; tobacco not thought of then

It is believed that any person under syphilitic therapy who gets a postarsphenamine dermatitis should not use tobacco in any form.

SUMMARY

It has been proved by other workers and myself that tobacco contains arsenic. It is common knowledge to those living in a tobacco section that farmers freely use lead arsenate as an insecticide to kill the horn worm. Nothing has been done or probably can be done in either the agricultural or manufacturing process to remove it. A series of cases with exfoliative dermatitis and positive blood arsenic, whose sources of arsenic were thought to be tobacco, was observed. The blood in a series of cases of severe dermatoses and normal individuals has been analyzed for arsenic and found to be negative, even though the subjects were heavy smokers. It is thought that there is a sufficient amount of arsenic in tobacco to have a very detrimental effect in cases of postarsphenamine dermatitis.

It is realized that the Gutzeit test may not be sensitive enough to determine a difference in the blood arsenic of smokers and nonsmokers.

It is believed that patients get this dermatitis because they are hypersensitive or allergic to arsenic.

This paper has attempted to present a theory. Its ultimate proof depends on the collaboration of other workers.

ABSTRACT OF DISCUSSION

DR. DUDLEY C. SMITH, Charlottesville, Va.: Dr. Barksdale's presentation calls attention first to an etiologic factor in some skin diseases and second to a contributing cause to untoward reactions in the modern treatment of syphilis. In persons hypersensitive to arsenic, enough of the substance can be introduced into the body by the use of tobacco to cause inflammatory changes in the skin. It is interesting to speculate how much effect occurs in other tissues, such as the kidneys or brain or aorta or the coronary vessels. Trivalent arsenic has an affinity for small arterioles and capillaries and thus may cause severe dermatitis, hemorrhagic encephalitis, purpura and possibly coronary disease. Pentavalent arsenic has affinity for structures of ectodermal origin. The taking of arsenic into the body from tobacco over a period of time may sensitize the tissues to this chemical, thereby causing from the same source later or preparing the basis for toxemia from other substances like arsphenamine. This work gives the dermatologist and syphilologist another bit of knowledge which will help to clarify the etiology of cutaneous eruptions and to prevent the all too prevalent

TABLE 4.—Control Cases

Case	Diagnosis	Blood Arsenic	Final Status
1. R. C. C.	Exfoliative dermatitis	Negative	Used snuff but was allergic to sodium thiocyanate taken for high blood pressure
2. D. W. P.	Exfoliative dermatitis	Negative	Apparently followed a seborehelic dermatitis; smoked and chewed
3. E. T. D.	Infectious eczematoid dermatitis	Negative	Heavy smoker but cleared up on removal of abscessed teeth
4. J. S. M.	Infectious eczematoid dermatitis	Negative	Heavy smoker but well after treatment for acute tonsillitis
5. J. G. C.	Infectious eczematoid dermatitis	Negative	Heavy smoker but cleared up on removal of abscessed teeth
6. J. A. R.	Acute disseminated lupus erythematosus	Negative	Smoked, had marked exfoliation and pregnancy; patient died
7. G. D. J.	Normal control	Negative	Moderate smoker
8. M. E. T.	Normal control	Negative	Moderate smoker
9. R. M. D.	Normal control	Negative	Moderate smoker
10. J. H. P.	Normal control	Negative	Heavy smoker
11. H. V. A.	Normal control	Negative	Heavy smoker
12. E. E. B.	Normal control	Negative	Heavy smoker

his blood. It is believed that the postarsphenamine dermatitis that this man had would have healed promptly if all the sources of arsenic had been removed.

Case 4 is one that is reviewed in retrospect. The patient was seen in 1936, at which time I did not realize that tobacco contained arsenic. She used snuff freely. She was referred to me by a physician who stated that her dermatitis began following the second injection of 0.2 Gm. of neoarsphenamine. I have since come to learn that this physician's statements are reliable. In spite of

untoward reactions in the therapy of syphilis. In cases of erythematous eczema and persistent erythema multiforme, it might be worth while to eliminate the use of tobacco as a therapeutic test. It is definitely indicated that tobacco be discontinued by patients receiving antisyphilitic treatment. This is a more theoretical than practical suggestion, because few people will follow this direction. The development of a spray which the farmers can use on tobacco which would be cheap and at the same time easily applied would, of course, correct this condition. It is an honor to open the discussion on this presentation, which has just received a certificate of merit in the Scientific Exhibit.

DR. HARRY M. ROBINSON, Baltimore: Dr. Barksdale's paper presents an interesting premise which I think should be kept in mind as a possible factor causing persistence or recurrence of the eruption in postarsphenamine dermatitis. In my experience with 350 cases of postarsphenamine dermatitis, complete involution occurred in all the patients except the few that died, through treatment with simple antipruritic applications and supportive care, including intravenous injections of dextrose solution. In one of the patients the eruption recurred once after apparent complete involution, although no arsenic or other heavy metal in any form was being administered. In two others the eruption persisted somewhat longer than the usual run of cases, but in these as well as in all the others final involution eventually was brought about without difficulty and without enlisting the aid of such elements as Dr. Barksdale has mentioned: this in spite of the fact that almost all the patients, male and female, were smokers and generally indulged in smoking during and after convalescence. Two of the patients were sensitive to trivalent and pentavalent arsenicals, including potassium arsenite. When Dr. Barksdale told me of his report, I sent for some of my postarsphenamine exfoliative dermatitis patients and three returned, one Negro woman and two white men. These I examined with patch tests for sensitivity to neoarsphenamine, a popular brand of cigaret tobacco and dried Maryland tobacco leaf which had been obtained from a storage room. This tobacco leaf was assayed for arsenic and contained 6 micrograms per gram, which is about the normal amount of arsenic contained in tobacco. The Negro woman was positive to the patch test with Maryland tobacco leaf but not to the 30 per cent solution of neoarsphenamine or to the cigaret tobacco. One white man was strongly positive to the neoarsphenamine but not to either tobacco. The third patient did not react positively to any of the tests. I realize that the results of these tests have no significance, as all three patients smoked and none had any residual eruption at the time of testing, although all three had had severe types of the eruption, necessitating hospitalization. If I encounter cases of postarsphenamine dermatitis which do not involute in a reasonable time I shall attempt to determine the effect of tobacco or other elements as possible aggravating factors.

DR. MARION B. SULZBERGER, New York: In the arsphenamine sensitization which I have studied, while a few patients have been hypersensitive to arsenic the vast majority are not hypersensitive to the element arsenic at all. They are sensitive to trivalent arsenicals but not to trivalent arsenic as such, but to trivalent arsenic in an organic, benzolic combination. This can be demonstrated, for example, by their lack of clinical sensitivity to arsenic: one can often administer solution of potassium arsenite or sodium arsenate injections or even tryptarsamide and other arsenicals with impunity to patients who have arsphenamine dermatitis. So that at least in most cases of arsphenamine dermatitis—but not in all—there is no sensitivity to the element arsenic as such. When individuals react to cutaneous tests with tobacco, I found that it was always to something in the tobacco other than the nicotine. That is as far as I could go in conclusions with regard to vascular sensitivity to tobacco. This refers not to the type of sensitivity which one sees in dermatitis of the sort that Dr. Barksdale has been studying but to the vascular sensitivities which are demonstrable in many cases of Berger's disease (thrombo-angiitis obliterans) and in other persons in the form of wheal reactions to scratch or intracutaneous tests with tobacco extracts. The

opportunities for exposure to arsenic are numerous. This element occurs not only in tobacco but in beer, bread, wine, fruits and fish and has been known to occur in small quantities in volatile form and can be inhaled through the air. In certain districts, for example near smelting works, one finds a hundredfold increase in the amount of arsenic in the blood and urine of persons who live on the lee side of blast furnaces as compared with those on the windward side. It is also known that eating sea fish and especially shellfish will materially increase the arsenic levels of the blood and urine. It therefore seems that, if it were conceivable that arsphenamine dermatitis could be maintained by the arsenic in tobacco, we should have to be careful not only of smoking but also of the food and drink of these patients. I should like to ask Dr. Barksdale whether he performed patch tests in these particular cases with water through which he has bubbled the smoke of the tobacco in question; and, if so, what were the results? Did this water contain appreciable amounts of arsenic? And particularly did it elicit positive patch tests in his patients and no reactions in controls?

DR. HERMAN SHARLIT, New York: Those of us who think in terms of specific allergies are somewhat confused when we are presented with allergens in terms of a single source that may not be completely elucidative of the allergen involved. Apparently the reactions that are induced in the skin here are coming from elements that are volatilized in a combustion mixture of a temperature well above 400 centigrade. What the form of the arsenic is at the moment of volatilization and as passed on to the lung is difficult to say. We must consider whether this may not be a lead arsenic compound, for the lead too is volatilized and the lead too gets into the lungs. It is possible the lead, either alone or in combination with the arsenic, plus other volatiles might have to be present to induce the sensitization in these individuals. At any rate, the deductions from such an investigation, if they are to be maintained, for example the injunction that people who are being treated with arsphenamine should, if there is any evidence of a sensitization to the trivalent arsenic, stop smoking, are serious restrictions for those who enjoy smoking. It would therefore be necessary to follow this through with a greater elucidation of the elements involved. I would be anxious to know, as Dr. Sulzberger suggested, what was contained in the water extract of the smoke. And in making these analyses in blood and urine, the lead also should be taken into consideration. One will realize in looking over the arsenic figures in the blood, as given in the tables, that they varied from a significant figure in the first to one in the third decimal place. That is a range of a hundredfold variation, with no apparent correlation with the clinical observations. Then many of the records indicated that there was no arsenic. I have had the impression that to find no arsenic in the blood is almost as rare as finding a high arsenic in the blood. There are still many hiatuses in leading to a conclusion with respect to whether it is arsenic alone that caused these disabilities.

DR. E. E. BARKSDALE, Danville, Va.: I appreciate the discussion and I have learned more probably than any one else. There are many facts in this experiment that need further investigation; unfortunately it was necessary to do this work in a small private laboratory with extremely limited facilities. I have been asked to explain the negative blood test. It is true that there is no such thing as a negative blood arsenic. In this work we have called the blood arsenic of normal individuals negative even though they might show a small trace of arsenic. While there is a large personal factor involved in reading the Gutzeit test, we have not called any of them positive unless they were definite. Dr. Robinson stated that he had not been able to obtain a positive patch test with tobacco; neither have I. The only positive patch tests in these cases have been obtained from lead arsenate itself. We have not done patch tests with distilled water of the mechanical smoker through which tobacco smoke has been bubbled; it brings up an interesting problem. I have used the word "hypersensitive" or "allergic" to explain these cases; I think a more descriptive phrase would be a "point of tolerance." Some people have a very low point of tolerance to arsenic. Fortunately, the point of tolerance for arsenic of most persons is much higher than the amount of arsenic that one could consume from tobacco.

MALARIA AND ARTIFICIAL FEVER IN THE TREATMENT OF PARESIS

PAUL A. O'LEARY, M.D., ROCHESTER, MINN., CHAIRMAN;
WALTER L. BRUETSCH, M.D., INDIANAPOLIS, FRANKLIN G. EBAUGH, M.D., DENVER, WALTER M. SIMPSON, M.D., DAYTON, OHIO, HARRY C. SOLOMON, M.D., BOSTON, STAFFORD L. WARREN, M.D., ROCHESTER, N. Y., FOR THE COOPERATING CLINICS AND R. A. VONDERLEHR, M.D., LIDA J. USILTON, M.A., AND I. V. SOLLINS, PH.D., WASHINGTON, D. C., FOR THE U. S. PUBLIC HEALTH SERVICE

During the past two decades the widespread therapeutic use of malaria gave rise to the consideration of other pyrexial methods for the treatment of paresis. The present study has been designed to compare the therapeutic results obtained by use of artificial fever produced by physical methods with those obtained by the use of inoculated malaria in the treatment of paresis. These two methods of fever therapy were employed independently or in association with some form of chemotherapy and have been evaluated in terms of the clinical and serologic response observed in the patients. The effects of chemotherapy alone have not been evaluated.

TABLE 1.—Duration of Treatment-Observation for Patients with Paresis

Duration of Treatment-Observation in Years	Method of Therapy			
	Malaria		Artificial Fever	
	Number	Per Cent	Number	Per Cent
2	340	30.9	136	42.5
3	156	14.2	66	20.6
4	88	8.0	49	15.3
5	102	9.3	37	11.6
6	88	8.0	22	6.9
7	91	8.3	7	2.2
8	63	5.7	2	0.6
9	64	5.8	1	0.3
10	41	3.7	...	...
11	67	6.1	...	...
Total	1,100	100.0	320	100.0

THE DATA

A total of 1,420 patient records were pooled for this study. Of these, 1,100 patients were treated with malaria and 320 with artificial fever.

Prior to the administration of fever therapy, the diagnosis of paresis or of taboparesis was established for each patient. In evaluating the results of therapy among patients with taboparesis, only the responses of the paretic symptoms to the therapy have been considered.

The study was limited to patients with paresis followed two years or more after the beginning of fever therapy (table 1). The median age for all paretics in this series was 41.5 years when fever therapy was instituted. The average difference in age between patients with mild and those with severe paresis was approximately four years, the patients with mild paresis being the younger. The intermediate group stood mid-

way in age between the mild and the severe. There was no age selection of candidates for one or the other type of fever therapy.

DEFINITIONS

The term "paresis" in this study refers to the symptom complex caused by syphilitic meningo-encephalitis, characterized by distinctive psychiatric, neurologic, serologic and spinal fluid abnormalities.

All patients were classified by degree of involvement on beginning treatment with fever therapy. The following subdivisions were maintained throughout the evaluation:

(a) Mild: Relatively free from signs of deterioration, with mental symptoms, usually transitory.

(b) Intermediate: Symptoms of manic excitement, depression or other psychiatric syndromes, in addition to evidence of moderate deterioration.

(c) Severe: Evidence of advanced deterioration.

The clinical results of therapy were defined as:

(a) Remission: Sufficient clinical recovery to permit the patient to return to his former socio-economic status.

(b) Improved: Complete or partial disappearance of clinical manifestations without corresponding improvement in the capacity to return to the former socio-economic status.

(c) Unimproved: No detectable clinical evidence of change in the course of the disease.

(d) Progressed: Clinical condition less satisfactory after therapy than before.

(e) Death: Treatment deaths during therapy, or deaths regardless of cause, occurring during or within three months subsequent to therapy.

Occasionally, further grouping of the cases in terms of clinical results was necessary in order to effect additional comparisons. These groups were:

(a) Clinical success: Remission.

(b) Clinical failure: Unimproved, progressed, death.

(c) Relapse: Reversal from a clinically successful result to a clinical failure.

The serologic results of therapy, as determined by spinal fluid and blood tests, were classed as:

(a) Positive (which includes cases with doubtful reactions).

(b) Negative.

(c) Not done.

The various degrees of abnormality of the spinal fluids were classed as:

(a) Group 1 (mildly positive): Spinal fluid in which the cell count was 10 or more, positive globulin test, with complement fixation or flocculation test negative or positive, and colloidal tests negative.

(b) Group 2 (moderately positive): Spinal fluid in which the cell count and globulin content were increased, with complement fixation or flocculation tests positive or weakly positive, and the colloidal test indeterminate or of the so-called luetic type.

(c) Group 3 (strongly positive): Spinal fluid in which the observations conformed to the so-called paretic formula, i. e. marked excess of globulin, strongly positive complement fixation results (at 0.2 cc. or less) or strongly positive flocculation tests, the paretic type curve on the colloidal test, and an increased cell count which may contain, in addition to small lymphocytes, large leukocytes and polymorphonuclear leukocytes.

(d) Group unknown: Spinal fluid in which the complement fixation or flocculation result was positive but results of other tests were unknown.

CLINICAL RESULTS

Yearly clinical remission rates were cumulated per hundred patients treated by method of therapy and degree of involvement of the paresis on beginning fever

Conducted by the cooperation of the Mayo Clinic, Rochester, Minn.; Central State Hospital, Indianapolis; Colorado Psychopathic Hospital, Denver; Miami Valley Hospital, Dayton, Ohio; Boston Psychopathic Hospital, and Strong Memorial Hospital, Rochester, N. Y. In addition to records from the institutions of the authors, the following clinic chiefs offered for analysis the records from their institutions: A. E. Bennett, M.D., Bishop Clarkson Memorial Hospital, Omaha; Harold N. Cole, M.D., Cleveland City and University Hospitals of Western Reserve University; J. R. Blalock, M.D., and Leland E. Hinsie, M.D., New York State Psychiatric Institute and Hospital; Frank R. Menagh, M.D., Henry Ford Hospital, Detroit, and Ernest H. Parsons, Fitzsimons General Hospital, Denver. The Committee acknowledges the preliminary statistical preparation of the material by Albert P. Iskrant, A.B., U. S. Public Health Service.

therapy. The total successful results of therapy are shown at the conclusion of any given year within the entire duration of treatment-observation. The increase in the successful outcomes of therapy within a given year may be obtained by subtraction (table 2).

Among the patients with mild and intermediate paresis there were no statistically significant differences

TABLE 2.—Average Yearly Clinical Remission Rates (Cumulated)

End of Each Year of Treatment-Observation	Rate of Remission per 100 Paretic Patients Under Treatment-Observation							
	Mild		Intermediate		Severe		Total	
	Ma-laria	Artificial Fever	Ma-laria	Artificial Fever	Ma-laria	Artificial Fever	Ma-laria	Artificial Fever
Three Year Treatment-Observation								
1	36.4	37.7	13.7	16.2	0.0	3.9	13.6	18.0
2	45.1	48.4	20.2	21.0	0.5	9.0	18.9	24.7
3	51.7	50.2	24.2	23.6	0.9	11.3	22.4	27.2
Four Year Treatment-Observation								
1	36.4	35.2	13.3	16.8	0.0	2.9	13.4	16.9
2	44.7	45.9	19.6	19.2	0.5	8.6	18.4	22.5
3	51.9	47.3	23.6	22.0	1.0	11.3	21.9	25.1
4	52.3	52.8	25.1	30.9	1.0	11.3	22.8	30.3

between the rates of remission obtained under malaria and those obtained under artificial fever therapy. Sharp and statistically reliable differences were noted between the results of the two methods of therapy among patients with severe paresis on beginning treatment.

The superiority of remission rates obtained under artificial fever therapy in patients with severe paresis but not in those with mild or intermediate paresis led to a complete review of the records by one of us (H. C. Solomon). This uniform classification of patients by degree of involvement of paresis on beginning treatment confirmed the original observations.

The earlier in the course of the disease the fever therapy was instituted, the more favorable were the clinical results. By the conclusion of three or four years of treatment-observation, more than one half the patients with mild paresis treated with either method of therapy had clinical remissions. The chances of clinical recovery with either method of therapy were reduced to approximately one in four for patients with intermediate paresis. The remission rates for patients with severe paresis, treated and observed for the same length of time, decreased to approximately one in a hundred under malaria and ten in a hundred under artificial fever (table 2). Proportionately more clinical progressions occurred in patients with severe paresis under malaria than under artificial fever therapy. Except for the better clinical response to artificial fever in patients with severe paresis (more clinical remissions and fewer clinical progressions) there were no other statistically reliable differences in the clinical results obtained with the two types of therapy (table 3).

For purposes of this study, we defined as treatment deaths not only patients who died during fever therapy but also those who died regardless of cause within three months of treatment. Under this definition the total crude death rate was higher with malaria (13 per cent) than with artificial fever (8 per cent). A subdivision of the material by degree of involvement of paresis prior to fever therapy indicates that the more severe the paresis the higher the frequency of death (table 4). This was true of patients treated with either type of fever therapy. Within each degree of involvement the percentage of deaths was higher under malaria than under artificial fever therapy. Although these individual differences were not statistically significant in

themselves, they all point in the same direction. Had sufficient material been available, a more definite statement as to the relative frequency of death under these two methods of treatment might have been possible through the construction of a death curve for the paretic. Such a death curve compared with that for the general population would have eliminated some of the uncontrolled factors in the present investigation.

The relative speed with which remissions were obtained was determined on the basis of all cases treated and observed for two or more years. To determine the speed of remission, the data were not limited to cases under treatment-observation for three or four year periods, because cases more resistant to treatment tended to remain under observation, while those less resistant disappeared earlier. Of the total remissions obtained under either method of therapy, approximately 90 per cent of the successful results occurred by the end of the third year. The degree of paretic involvement on beginning fever therapy influenced the frequency and speed of expected remissions. Remissions were obtained from one to two years earlier in mild than in intermediate or severe paresis.

None of the patients in whom clinical improvement was delayed until the third year after beginning therapy at any time reached the remission stage. Of the 432 with clinical improvement during the first or second year after beginning fever therapy, subsequent clinical remissions were obtained in 34 per cent of those with clinical improvement the first year and 12 per cent of those in whom clinical improvement was delayed until the second year. Therefore the earlier the positive clinical response was obtained, the better were the prospects for eventual remission.

Once a complete remission had been obtained, the chances of its being maintained were 95 out of 100. In the malaria-treated group 3.3 per cent and in the artificial fever group 5.5 per cent of the remissions subsequently relapsed. The available data show that fifteen of a total of seventeen relapses occurred within

TABLE 3.—Clinical Results After Third Year in Patients Under Treatment-Observation Three or More Years *

Method of Fever Therapy	Remission		Improved		Unimproved		Progressed		Death		Total	
	Num-ber	Per Cent	Num-ber	Per Cent	Num-ber	Per Cent	Num-ber	Per Cent	Num-ber	Per Cent	Num-ber	Per Cent
Mild Paresis												
Malaria	87	52.4	53	31.3	12	7.2	6	3.6	9	5.4	166	100.0
Artificial fever	32	59.3	10	18.5	6	11.1	4	7.4	2	3.7	54	100.0
Intermediate Paresis												
Malaria	120	27.3	159	36.1	69	15.7	40	9.1	52	11.8	440	100.0
Artificial fever	27	23.1	40	41.7	14	14.6	5	5.2	10	10.4	96	100.0
Severe Paresis												
Malaria	2	0.8	40	16.1	83	35.3	33	13.3	86	34.5	249	100.0
Artificial fever	6	12.0	8	16.0	20	40.0	2	4.0	14	28.0	50	100.0

* Including treatment deaths and deaths within three months of treatment.

three years subsequent to the year of remission. The highest percentage of relapses occurred among the patients with severe paresis. The differences in the relapse rates of the two methods of fever therapy were not statistically significant.

SEROLOGIC RESULTS

Laboratory data, consisting of at least one pretherapy and one posttherapy spinal fluid and blood examination, were available for only one half to three fourths of the

1,100 cases treated with malaria and for from 75 to 90 per cent of the 320 cases treated with artificial fever. It was assumed that the standards and technics of laboratory testing were comparable in the several clinics cooperating in this study.

Regardless of the method of therapy, the percentages of reversal both in spinal fluid and in blood increased

too few to permit the establishment of satisfactory statistical differences, but those treated with tryparsamide and a heavy metal represented a sufficient number for this purpose. The percentages of spinal fluid and blood serologic reversals obtained through treatment with malaria plus tryparsamide were significantly higher than those obtained with artificial fever plus tryparsamide.

Twice as high a proportion of patients experienced blood and spinal fluid reversals when chemotherapy was employed with malaria as when similar forms of chemotherapy were used with artificial fever. The amount of such chemotherapy administered to each fever group was evaluated. For this purpose treatment with various forms of chemotherapy was reduced to "chemotherapeutic units" based on the following assumptions:

- 1 injection of a trivalent arsenical, 1 treatment unit.
- 1 injection of a pentavalent arsenical (tryparsamide), 1 treatment unit.
- 0.35 intraspinal treatment, 1 treatment unit.

Recognizing that the analysis is based on an arbitrary assumption of "chemotherapeutic units," the apparent superiority in spinal fluid reversal rates of the malaria patients treated with auxiliary chemotherapy suggests association with a greater amount of chemotherapy administered. By the end of the third year the patients with spinal fluid reversals treated with malaria had received 17 per cent more chemotherapy than those treated with artificial fever therapy.

Chemotherapy, auxiliary to either type of fever therapy, appeared necessary not only to obtain a higher percentage of spinal fluid reversals but also to maintain these reversals. Among patients not treated with auxiliary chemotherapy, approximately 42 per cent of all spinal fluid reversals subsequently relapsed, as compared with only 24 per cent spinal fluid relapses in cases treated with auxiliary chemotherapy. Two thirds of all the spinal fluid relapses, regardless of whether or not chemotherapy was employed, occurred within one year following the original reversal.

as the duration of treatment-observation grew longer. Spinal fluid reversal rates at the conclusion of each of four annual periods were not only more rapid but approximately twice as frequent under malaria as under artificial fever. Positive blood reversed more rapidly though not in greater proportion than positive spinal fluid. The percentage of blood reversals was greater in the malaria-treated group but not so rapid as in the artificial fever group.

These differences in serologic response to the two methods of therapy were further investigated as to the abnormality of spinal fluid prior to fever therapy and to the influence of chemotherapeutic agents.

The more abnormal the spinal fluid the less responsive it was to any type of treatment. However, it was found that proportionately as many patients treated with malaria as with artificial fever had strongly abnormal (paretic type) spinal fluid. Therefore, any increase in the spinal fluid reversal rate in the malaria-treated patients was not due to favorable differences in the pretherapy abnormality of spinal fluid in that group.

To determine the effect of chemotherapy, the patients under study were divided into two major groups: those receiving no chemotherapy and those who were given chemotherapy in addition to or in connection with fever therapy. Since the spinal fluid rates were influenced by the duration of the treatment-observation period, the comparison was confined to the status of the spinal fluid and blood during the third year of treatment-observation of patients who were observed for three or more years.

The percentages of spinal fluid and blood reversals in the malaria and artificial fever therapy patients not receiving chemotherapy were similar. None of the differences were statistically significant. Among those patients treated with chemotherapy better results were observed in the malaria than in the artificial fever group. These were statistically significant (table 5).

In evaluating the specific arsenical used in conjunction with fever therapy it was found that the number of patients treated with arsphenamine only, or with the combination of arsphenamine and tryparsamide, were

TABLE 5.—*Posttherapy Status of Originally Positive Spinal Fluids and Blood After Three Years of Treatment—Observation in Paretic Patients Treated with Fever Only and with Fever Plus Chemotherapy*

Method of Therapy	Posttherapy Status			
	Spinal Fluids		Blood	
	Per Cent of Negative	Total Cases of Positive	Per Cent of Negative	Total Cases of Positive
Malaria only.....	5.8	91.2	15.9	81.1
Artificial fever only.....	11.1	88.9	13.5	86.5
Total fever only.....	6.7	93.3	15.4	84.6
Malaria plus chemotherapy.....	29.6	70.4	30.6	69.4
Artificial fever plus chemotherapy.....	14.3	85.7	13.6	86.4
Total fever plus chemotherapy.....	23.3	74.5	25.4	74.6

The significance of the blood was studied as an indication of the spinal fluid reaction. Of patients with originally positive blood and spinal fluids, on termination of four years' treatment-observation, only 15 per cent had obtained a reversal of both the blood and the spinal fluid, whereas of 63 per cent the blood and spinal fluid remained positive. Therefore a negative blood did not indicate the status of the spinal fluid but a persistently positive blood was frequently indicative of a positive spinal fluid.

Clinical Notes, Suggestions and New Instruments

MULTIPLE LACERATIONS OF MUCOSA OF THE RECTUM AND SIGMOID FROM A FOREIGN BODY INGESTED WITH GRAPE JELLY

MORTIMER DIAMOND, M.D., CHICAGO

One of the most interesting phases of proctology is the subject of foreign bodies. The literature contains numerous reports of the recovery of these objects from the rectum and the sigmoid, where either they gain entrance by ingestion, by introduction through the anal canal or by perforation from an adjacent viscus, or they form in situ. Of these the oral route is the commonest, and though the ingestion is usually accidental it may be intentional for purposes of concealment, suicide or entertainment. In many instances the patient is conscious of the fact that he swallowed the object, but often he is unaware of this for it may occur during anesthesia, intoxication or other semistuporous states.

One is amazed by the variety and number of ingested objects that have been removed from the rectum. Gant¹ mentions more than fifty different kinds, and a complete list very likely would include many more. Probably the largest number of foreign bodies ever removed were a group of 1,874 cherry pits impacted in the rectum of a man 37 years old. This case was reported by Falk² in 1915. The patient complained of gradually increasing constipation, swelling of the abdomen and finally diarrhea. Examination revealed the impaction in the rectum, from which 897 pits were removed digitally. The next day an additional 399 were obtained, and one hour later the patient passed 578 more. He had been eating cherries during that entire summer and had not taken the trouble to remove the pits.

Foreign bodies may pass through the gastrointestinal tract without causing any trouble. This often is the case when the object is small and smooth, as a bead, marble or button. However, when it is larger disturbances usually develop, the clinical picture produced being dependent on the physical characteristics of the object in question and the segment of the gastrointestinal tract involved.

A large foreign body such as a ball, key or set of teeth may cause pain as it is swallowed, epigastric distress and vomiting when in the stomach and abdominal cramps while going through the intestine. Although complete obstruction is infrequently produced, interference with the passage of the contents through the gastrointestinal tract is not uncommon, occurring when the object becomes lodged at some point. The most frequent sites are the esophagus, the pylorus, the duodenum, the ileocecal region, the rectosigmoid juncture and the lower part of the rectum.

If the object is sharp like a pin, a fish bone or a piece of glass it may lacerate the mucosa to cause bleeding or it may perforate the bowel and lead to infection, abscess, fistula or peritonitis. When the lacerations are large or numerous, sufficient blood will be lost to color the stool.

With a foreign body in the rectum the patient may experience a sense of pressure, weight or fullness associated with a desire for a bowel movement, which will be difficult if the object is large, and painful and associated with bleeding if it is sharp and lacerates the anal canal while being expelled. Occasionally the foreign body forms a nucleus around which feces collect and inspissate. In these cases constipation gradually becomes more marked, and eventually a stercoral type of diarrhea may develop.

As a rule it is not very difficult to find a foreign body in the rectum. At times it can be seen protruding through the anus. Usually it can be found on digital examination. When it is beyond the reach of the finger, the routine proctoscopic

and sigmoidoscopic examination will reveal it and the injuries of the mucosa that may be present. One should not overlook a small foreign body, which may be caught in an anal crypt or on the superior surface of a valve of Houston. Roentgenologic examination of the colon is important in locating those foreign bodies beyond the reach of the sigmoidoscope. Often more difficulty is encountered in the removal of the object than in the diagnosis, and much ingenuity may be required to accomplish this successfully.

The following report makes an interesting addition to the list of unusual ingested foreign bodies which cause multiple lacerations of the mucosa of the rectum and sigmoid with rectal bleeding. A review of the literature fails to reveal an account of a similar case.

REPORT OF CASE¹

On March 19, 1936, Dr. N. consulted me about Mrs. N. T., a white woman aged 38, who complained of abdominal cramps and bloody bowel movements. Six days previously she had eaten some grape jelly that seemed gritty. The following day while she was eating more of the same jelly something cut her tongue and caused it to bleed. She removed a sharp object from her tongue and on seeing it immediately called her physician, fearing that she had swallowed some glass. Vomiting and later abdominal pain developed and she began to pass bloody stools.

Dr. N. examined her, treated the tongue, prescribed a soft diet and liquid petrolatum and then examined the jelly. In it he found some flat, sharp, pointed, roughly triangular to spearhead shaped crystalline objects that were colorless to yellowish and up to one-fourth inch in longest dimension. He too thought that they were pieces of glass but for verification sent them to a chemist for analysis.

Because bloody stools continued to be passed, I was asked to make a proctologic examination. Except for a mildly tender abdomen the general physical picture was normal. Two linear lacerations approximately one-fourth inch long were seen in the skin of the outer portion of the anal canal. They were superficial, with thin edges and hemorrhagic bases. The tone of the anal muscles was increased and the anal canal was tender.

The mucosa of the lower 10 inches of the rectum and the sigmoid as seen through the proctoscope and sigmoidoscope presented a number of lacerations, some lying obliquely and others in the long axis of the bowel. They were up to 3 mm. deep and 13 mm. long, being most numerous in the lower part of the rectum. Some were irregular and others linear, and in the deeper ones were bits of sharp glasslike particles similar to those found in the jelly. The mucosa did not show any other changes.

The lesions in the mucosa were definitely lacerations and did not resemble the umbilicated ulcers of amebic dysentery, the elliptic ulcerations of tuberculosis of the bowel or the irregular secondary infected ulcers of chronic thrombo-ulcerative colitis.

From the definite history of laceration of the tongue while eating, the vomiting, the abdominal pains and the passage of bloody stools coupled with the lacerations in the mucosa of the rectum and the sigmoid, it was readily evident that the patient was suffering from the traumatic effects of the sharp foreign bodies which she had swallowed.

After continuation of the nonresidue diet, liquid petrolatum and antiseptic irrigations, the bleeding gradually subsided and the wounds healed.

COMMENT

The interesting feature in this case is the type of foreign body that was present in the jelly, for contrary to expectations the chemist, Mr. George Borrowman, reported that the objects were not pieces of glass but crystals of potassium bitartrate.

According to Sir Edward Thorpe,³ potassium bitartrate is a natural constituent of grape juice and because of its lesser solubility in alcohol is deposited on fermentation, partly as a crystalline crust (argol) and partly with the lees. Its solubility is diminished by the presence of tartaric acid, which

From the Proctologic Division of the Surgical Dispensary, Mount Sinai Hospital.

1. Gant, S. G.: *Diseases of the Rectum, Anus and Colon*, Philadelphia, W. B. Saunders Company, 1923.

2. Falk, J.: Ein seltsamer Befund im Mastdarm eines Mannes, *Med. Klin.* 11:1158 (Oct. 17) 1915.

3. Thorpe, Sir Edward: *A Dictionary of Applied Chemistry*, London, Longmans, Green & Co., Ltd., 1926, vol. 6, p. 687.

also exists naturally in grape juice, and potassium sulfate, potassium nitrate and especially potassium chloride greatly reduce its solubility in water. Its crystals are aggregates of small hard rhombic prisms.⁴

The question "Why did crystallization take place?" naturally arises. Commercially, grape jelly is usually made not from whole grapes but from grape juice, which is taken from large storage tanks as needed. Perhaps some change occurred in the grape juice before it was processed into jelly. Bacterial fermentation with alcohol formation and crystallization is unlikely because the juice is stored at a low temperature. Autogenous enzyme action, however, might have changed the acidity of the juice, and perhaps in the concentration incident to jelly making crystallization followed. The question can be answered only after a careful investigation at the plant.

The question now arises, Can crystals of potassium bitartrate go through the entire gastrointestinal tract without being dissolved? This depends on (1) the number, the size and the solubility of the crystals, (2) the character, the composition and the pH of the intestinal contents and (3) the length of time in the intestinal tract. In one set of circumstances they may dissolve completely and in another they may not. In this case, however, it is apparent that complete solution did not occur because crystals were removed from the lacerations in the rectum.

Another matter of interest is the question whether or not there were any lacerations, in addition to those seen in the rectum and the sigmoid, in the rest of the gastrointestinal tract. One might expect that the soft contents of the upper intestinal canal would coat the crystals and prevent any damage to the mucosa. But in view of the vomiting, the epigastric distress, the abdominal cramps and the continued passage of bloody feces it is assumed that lacerations were probably present throughout the intestine.

CONCLUSIONS

An ingested foreign body may lacerate the mucosa of the rectum and the sigmoid and cause rectal bleeding.

A case of rectal bleeding was due to multiple lacerations from crystals of potassium bitartrate ingested with grape jelly.

58 East Washington Street.

AN ADDITIONAL PHYSICAL SIGN OF A MALIGNANT TUMOR OF THE BREAST

CLARENCE E. REES, M.D., SAN DIEGO, CALIF.

The characteristic fixation of malignant tumors of the breast either to the skin or to the fascia of the pectoralis major muscle is well known. This characteristic is due to the arrangement of the areolar tissue and of the capsule of the breast. The continuity of the stroma throughout the gland forms compartments for the secreting elements. Fibrous prolongations from the stroma of the breast connect the breast in its anterior portion with the under surface of the skin and in its posterior portion with the aponeurosis of the pectoralis major muscle. Thus all tissues surrounding the breast are bound to it by connective tissue fibers which are continuous with the matrix of the breast.

Because of this peculiar structure, a malignant tumor in the breast infiltrates the matrix and causes a contraction of its fibrous elements. This contraction produces an abnormal firmness in the area of involvement. As the process progresses this contraction radiates in all directions from the tumor and causes the tumor to become fixed to the surrounding structures. The fixation is first apparent in structures which lie nearest to the tumor mass. If the tumor is near the skin, the fixation first involves the skin; if it is central, fixation results in retraction of the nipple; if it is deep, the fixation first involves the muscles.

Fixation and dimpling of the skin are not difficult to observe or to elicit. The same is true of retraction of the nipple. Deep fixation is more difficult to ascertain. It is especially difficult

in the many cases in which there is loss of muscle tone due to the degenerative changes of age. Because of this loss of muscle tone the pectoralis major muscle, even with the arm in full abduction, is subject to a wide range of motion, and fixation of the tumor to this structure may not be readily demonstrated by the usual methods. My associates and I have found that fixation can be demonstrated in such cases by an additional maneuver.

After the usual procedures with the arm held at the side and then in abduction in both the sitting and the horizontal position have been carried out, the patient, while in the horizontal position, is requested to bring the arm on the affected side to a right angle and, with the examiner standing in the plane of the axilla on that side, to exert pressure with the arm against the examiner. This procedure actively tenses the pectoralis major muscle so that if the tumor is attached to the pectoralis fascia it will immediately become fixed and immobile.

This maneuver has been used over a period of at least ten years and has been found to reveal fixation of the tumor to the pectoralis major muscle in many cases in which such fixation could not be demonstrated otherwise. I feel, therefore, that it constitutes a valuable additional physical sign of malignant condition of the breast.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

SHARK LIVER OIL.—The oil extracted from the livers of the shark, mainly of the variety *Hypoprius brevirostris* (lemon), but any or all of the following varieties may be included: *Odontaspis littoralis* (sand), *Isurus punctatus* (mackerel), *Triakis semifasciatus* (leopard), *Sphyrna zygaena* (hammerhead), *Carcharias obscurus* (dusky), *Ginglymostoma cirratum* (nurse), *Carcharias milberti* (white) and *Carcharias limbatus* (black tip). It is biologically assayed to have a potency of not less than 16,500 units of vitamin A (U. S. P.) per gram and of not less than 40 units of vitamin D (U. S. P.) per gram; the latter is insignificant if taken according to directions.

Actions and Uses.—See the general article *Fish Liver Oils, Preparations and Concentrates, New and Nonofficial Remedies*, 1940, p. 535.

Dosage.—One capsule, or about 8 minims, daily.

Shark liver oil is an amber to brown oily liquid possessing a fishy odor and taste. It is insoluble in water, slightly soluble in alcohol and soluble in chloroform, ether, benzene, ethyl acetate and carbon disulfide. The specific gravity is from 0.917 to 0.923 at 25 C. The refractive index is from 1.475 to 1.480 at 20 C.

A solution of one drop of the oil in 1 cc. of chloroform, when shaken with one drop of sulfuric acid, acquires a light violet color, changing to purple and finally brown or blue. Transfer 5 cc. of oil to a centrifuge tube and add 5 cc. of benzene; centrifugate for twenty-five minutes at 25 C.; no precipitate forms and a clear solution remains.

Fill a tall, cylindrical, standard oil-sample bottle of about 120 cc. capacity with shark liver oil and immerse in a water bath at about 10 C.; the oil becomes turbid at about 15 C. but fluid and clear when the bath is warmed to 45 C.

Transfer 2 Gm. of shark liver oil, accurately weighed, to an Erlenmeyer flask and dissolve in 20 cc. of a mixture of equal volumes of alcohol and ether, which previously has been neutralized with tenth-normal sodium hydroxide, using five drops of phenolphthalein T. S. as indicator, and titrate with tenth-normal sodium hydroxide to the production of a pink color which persists for fifteen seconds; not more than 1 cc. of tenth-normal sodium hydroxide is required (*free acid*). The amount of unsaponifiable matter as determined by the method of the U. S. P. XI, page 446, is not less than 3.0 per cent nor more than 6.0 per cent. The saponification value as determined by the method of the U. S. P. XI, p. 445, is not less than 170 nor more than 187. The iodine value as determined by the method of the U. S. P. XI, page 445, on from 0.18 to 0.20 Gm. of sample, accurately weighed, is not less than 125 nor more than 145.

Shark Liver Oil-Shark Industries.—A brand of shark liver oil—N. N. R.

Manufactured by Shark Industries, Inc., Hollywood, Fla. No U. S. patent or trademark.

Capsules Shark Liver Oil, 8.1 minims: Each capsule contains not less than 7,500 U. S. P. units of vitamin A and not less than 18 U. S. P. units of vitamin D.

4. Schiff: *Ann. d. Chem.*, 1859, p. 11289, quoted by Thorpe.³
From the Rees-Stealy Clinic.

DIGILANID.—A mixture of the isomorphous crystallized cardio-active glucosides lanatosid-A ($C_{40}H_{70}O_{16}$), lanatosid-B ($C_{40}H_{70}O_{20}$) and lanatosid-C ($C_{40}H_{70}O_{20}$), obtained from the leaves of Digitalis lanata. The three components are present in the mixture in the proportions in which they occur in the crude drug, namely about 47 per cent lanatosid-A, 16 per cent lanatosid-B and 37 per cent lanatosid-C.

Actions and Uses.—The actions and uses are closely similar to those of digitalis U. S. P.

Dosage.—The average oral daily dose is from two to four tablets or from 2 to 4 cc. of the liquid until the therapeutic effects are induced or until minor toxic symptoms appear, after which a maintenance dose of about half that just given will usually be sufficient. For rectal administration, one or two suppositories daily. Urgent cases sometimes require the administration of larger oral doses or the intramuscular or intravenous injection of suitable doses. These demand the careful observation of the proper technic, which is described in the circular which accompanies the package.

Manufactured by Sandoz Chemical Works, Inc., New York. U. S. patents 1,923,490 (Feb. 19, 1931; expires 1948) and 1,923,491, (Aug. 22, 1931; expires 1948). U. S. trademark 291,301.

Ampules Digilanid 2 cc. (For Intramuscular Use): Each ampule contains 0.4 mg. of digilanid, equivalent to 1.2 cat units.

Ampules Digilanid 4 cc. (For Intravenous Use): Each ampule contains 0.8 mg. of digilanid, equivalent to 2.4 cat units.

Suppositories Digilanid 0.5 mg.: Each suppository contains 1.5 cat units.

Tablets Digilanid 0.33 mg.: Each tablet contains 1 cat unit.

Vials Digilanid 30 cc.: Each cubic centimeter (16 minims) contains 0.33 mg. of digilanid, equivalent to 1 cat unit.

The dry leaves of Digitalis lanata are ground with ammonium sulfate, wetted with water and extracted with ethyl acetate. The filtered extract is evaporated to dryness in vacuo, treated with ether and allowed to stand until the mass becomes solid. The ether is poured off and the residue digested with ether. The dried residue from the operation is pulverized, dissolved in methyl alcohol and treated with lead hydroxide in water. The resultant mixture is neutralized and filtered; the filtrate is concentrated in vacuo and the precipitated glucosidal mixture filtered. The residue is recrystallized from methyl alcohol and water mixtures.

Digilanid crystallizes from aqueous methanol solutions in flat prisms which contain 6 per cent (2 mol.) of methanol and 3.5 per cent (2 mol.) of water as solvents of crystallization. When dried in a high vacuum at 90 C., these solvents are lost. On standing, the dried material takes up approximately 7 per cent of moisture; the dosage of the product is based on this hydrated form.

Air dried digilanid occurs as a white, odorless powder, possessing a bitter taste; soluble in methanol, 1 in 20, very slightly soluble in water, 1 in 10,000, and insoluble in ether. Digilanid, when heated rapidly, melts with decomposition above 245 C.

Transfer 0.002 Gm. of digilanid to a 15 cm. test tube and add 4 cc. of glacial acetic acid and one drop of ferric chloride solution. Add from a pipet 4 cc. of sulfuric acid to underlay the acetic acid solution and allow to stand one hour. A blue color appears in the upper zone (digitoxose) and a violet-brown in the lower zone (mixture of aglycones). Transfer about 0.02 Gm. of digilanid to a 10 cm. test tube and add 1 cc. each of water, methanol and lead acetate solution: no immediate precipitation or coloration occurs (appreciable amounts of tannoid substances). Transfer about 0.02 Gm. of digilanid to a test tube and add 2 cc. of methanol, 2 cc. of water and 0.5 cc. of alkaline cupric tartrate solution, and heat for ten seconds: no turbidity appears (free reducing sugars).

Transfer about 0.2 Gm. of digilanid, dried under vacuum and accurately weighed, to a 10 cc. volumetric flask and make up to volume with ethanol. Mix, transfer to a 2 dcm. polarizing tube and observe the angular rotation, using sodium light at 25 C.: the specific rotation $[\alpha]_D^{25}$ is not less than +32.0 and not more than +33.8.

Transfer about 0.2 Gm. of digilanid, dried under vacuum and accurately weighed, to a 150 cc. glass stoppered Erlenmeyer flask and cautiously add 40 cc. of methanol and 20 cc. of tenth-normal sodium hydroxide. Stopper the flask and allow to stand seventy-two hours. To a similar flask add 40 cc. of ethanol and 20 cc. of tenth-normal sodium hydroxide, stopper and allow to stand seventy-two hours. Titrate both solutions with tenth-normal hydrochloric acid, using phenolphthalein as indicator: the volume of tenth-normal sodium hydroxide required by 1 Gm. of digilanid is not less than 20.0 and not more than 23.0 cc.

Transfer about 0.2 Gm. of digilanid, dried under vacuum and accurately weighed, to a 250 cc. separator, add 100 cc. of chloroform, 20 cc. of methanol and 100 cc. of water, and shake at 25 C. for one minute. Separate the layers and evaporate each in vacuo to dryness. Wash the residues into tared weighing bottles with methanol and again evaporate to dryness in vacuo at 55 C., and weigh: the weight of the residue from the chloroform divided by the sum of the weights of the residues is not less than 0.60 and not more than 0.63.

STAPHYLOCOCCUS ANTITOXIN.—Antitoxin prepared by immunizing horses with staphylococcus toxoid and/or staphylococcus toxin.

Actions and Uses.—Staphylococcus antitoxin is suggested in the treatment of acute and severe staphylococcal infections with or without septicemia. Its use in treatment calls for adequate dosage administered early; most of the antitoxin estimated to be necessary for the entire treatment of the infection should be injected during the first few hours after decision is made to use the serum. Supplementing the use of antitoxin in the more severe types of staphylococcal infections, surgical drainage of accessible foci and transfusions with normal or immune donors should be a part of the treatment.

Dosage.—For the treatment of localized infections, 10,000 units. For the treatment of more severe infections, from 30,000 to 100,000 units early during the first day in divided doses, followed by from 20,000 to 100,000 units daily until the pulse rate and temperature have subsided and the blood cultures are sterile for three consecutive days.

Lederle Laboratories, Inc., Pearl River, N. Y.

Staphylococcus Antitoxin "Globulin-Lederle-Modified."—An antitoxic serum prepared by immunizing horses with gradually increasing doses of staphylococcus toxoid and/or staphylococcus toxin. The serum is refined by a controlled method of selective digestion of the proteins of the immune horse blood with pepsin which digests up to 90 per cent of the coagulable protein; a smaller portion is precipitated and the remainder, a pseudoglobulin fraction, is purified first by ordinary filtration and then by ultrafiltration and dialysis. The serum is standardized on the basis of the international unit which was adopted by the Permanent Commission on Biological Standardization of the Health Organization of the League of Nations in August 1934, the unit being equivalent to approximately 125 original antidermonecrotic units, an antidermonecrotic unit being that amount of antitoxin required to neutralize one necrotizing dose of staphylococcus toxin. Marketed in packages of one vial containing 10,000 international units and in packages of one vial containing 20,000 international units.

CROTALUS ANTITOXIN (See New and Nonofficial Remedies, 1940, p. 419).

Mulford Biological Laboratories, Sharp & Dohme, Philadelphia and Baltimore.

"Lyovac" Antivenin (Nearctic Crotalidae) Polyvalent.—North American Anti-Snake-Bite Serum.—A lyophilized antitoxic serum prepared by injecting horses with venoms from serpents of the North American species of the family Crotalidae (rattlesnake venoms, 90 per cent; moccasin venoms, 10 per cent. Moccasin venoms include both the cotton-mouth moccasin and the upland moccasin or copperhead). The bulk globulin before lyophilization is tested for sterility. The following safety test is made: 3 cc. of the finished antivenin is injected into each of two guinea pigs. Both animals must remain healthy for at least seven days. The total solids content must not exceed 20 per cent. The product is standardized for potency so that 1 cc. of the antivenin will neutralize 20 minimum lethal doses of venom injected intravenously into 350 Gm. pigeons. With standard rattlesnake venom (Crotalus atrox), the amount neutralized by 1 cc. of antivenin equals 3 mg. of the dried venom.

The process of lyophilization consists in the following: The antivenin in specially designed final containers is rapidly frozen by immersion in a freezing mixture to convert the substance with the least molecular rearrangement. The container is then subjected to a high vacuum to accomplish dehydration, which is continued until the residual moisture content is less than 1 per cent.

Marketed in packages of one ampule-vial containing a sufficient amount of lyophilized antivenin to yield 10 cc. of refined and concentrated globulin with one syringe containing 10 cc. of distilled water (preserved with phenol 0.35 per cent) and a 1 cc. ampule-vial of normal horse serum (diluted 1:10) as test and desensitizing material.

IMMUNE GLOBULIN (HUMAN) (See New and Nonofficial Remedies, 1940, p. 437).

The Gilliland Laboratories, Inc., Marietta, Pa.

Immune Globulin (Human).—Human placentas from healthy mothers are extracted in sodium chloride solution. After extraction the centrifuged supernatant is refined and concentrated with ammonium sulfate in a manner similar to that used for diphtheria antitoxin. The resulting concentrate is dialyzed to remove sulfates and is preserved with 0.1 per cent of phenol and 0.01 per cent of sodium ethyl-mercuri-thiosalicylate and passed through a bacteriologic filter. The product is standardized by assay in guinea pigs of the diphtheria antitoxin content. Marketed in packages of 2 cc. and 10 cc. vials.

SULFANILAMIDE (See New and Nonofficial Remedies, 1940, p. 489).

The following dosage form has been accepted:

Sulfanilamide Tablets, 7½ grains.

Prepared by Sharp & Dohme, Philadelphia and Baltimore. No U. S. patent or trademark.

ANTIPNEUMOCOCCUS SERUM TYPES I AND II COMBINED (See New and Nonofficial Remedies, 1940, p. 432).

Mulford Biological Laboratories, Sharp & Dohme, Inc., Philadelphia and Baltimore.

Antipneumococcus Serum, Concentrated (Pneumococcus Antibody Globulin, Types I and II)-Mulford.—(See New and Nonofficial Remedies, 1940, p. 433). Also marketed in packages of one ampule vial containing 20,000 units each of types I and II, and in packages of one ampule vial containing 50,000 units each of types I and II.

***CAFFEINE WITH SODIUM BENZOATE** (See New and Nonofficial Remedies, 1940, p. 168).

The following dosage form has been accepted:

Endo Products, Inc., Richmond Hill, New York.

Amposites Caffeine with Sodium Benzoate, 2 cc.: An aqueous solution containing in each 2 cc. caffeine with sodium benzoate-U. S. P. 0.5 Gm. (7½ grains).

SULFAPYRIDINE (See New and Nonofficial Remedies, 1940, p. 494).

Sulfapyridine-Wyeth.—A brand of sulfapyridine-N. N. R.

Manufactured by John Wyeth & Brother, Inc., Philadelphia. No U. S. patent or trademark.

Tablets Sulfapyridine-Wyeth, 0.5 Gm. (7.7 grains).

MEDICAL EDUCATION IN THE UNITED STATES AND CANADA

FORTIETH ANNUAL PRESENTATION OF EDUCATIONAL DATA BY THE COUNCIL ON
MEDICAL EDUCATION AND HOSPITALS

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Data pertaining to the major activities of the Council are presented annually in the Educational Number of THE JOURNAL. In the following pages will be found the usual report on preliminary and undergraduate medical education with a description of the approved medical schools and revised lists of hospitals approved for the training of interns and approved for residencies and fellowships in the specialties. A summary of the activities of the various agencies interested in continuation courses for practicing physicians is here given, as well as the Principles Regarding Graduate Medical Schools ratified by the House of Delegates of the American Medical Association at its recent New York session. Finally there are included the official requirements of each of the fifteen approved examining boards in medical specialties.

This issue of THE JOURNAL constitutes a valuable source of information for students, interns, residents and practicing physicians as well as those interested in specialty certification. It may equally interest deans and other officials of medical schools, licensing agencies, the directors and staffs of hospitals, and the various general and special societies interested in the promotion of graduate and postgraduate medical education.

These data are based on official reports. The Council and THE JOURNAL express thanks and appreciation to the officials of the institutions and agencies named and to others for their cordial cooperation in supplying the material submitted in this presentation and for other records furnished throughout the year to the office of the Council and the members of its staff on inspection or visitation, enabling the Council to maintain its medical student and hospital registers efficiently and to carry on its activities as outlined by the House of Delegates of the American Medical Association.

PRELIMINARY EDUCATION

The Council's minimum requirement for admission to approved medical schools is two years of college training which include English, and theoretical and

practical courses in physics, biology and general and organic chemistry. Three years or more in college is, however, recommended. Since it cannot be generally assumed that all who have satisfied these requirements in terms of hourly credits are fitted for the study of medicine, qualitative standards also are imposed.

As a rule applicants receive their preliminary education in institutions approved by accrediting agencies. Exception may be made in the case of those who demonstrate superior ability. For the convenience of students and admitting officers the Council publishes

TABLE 1.—Requirements for Admission to Medical
Schools, 1936-1940

	Degree	Years				
		Four	Three*	Three	Two and One-Half	Two
1936-1937	4	1	3	36	1	32
1937-1938	5	1	4	39	1	27
1938-1939	5	1	5	45	2	19
1939-1940	5	1	5	55	..	11
1940-1941	6	1	5	56	..	9

* Baccalaureate degree conferred in absentia at end of first medical year.

annually a list of colleges of arts and sciences approved by the following national and regional educational associations:

Association of American Universities.
North Central Association of Colleges and Secondary Schools.
Middle States Association of Colleges and Secondary Schools.
New England Association of Colleges and Secondary Schools.
Southern Association of Colleges and Secondary Schools.
Northwest Association of Secondary and Higher Schools.

At a meeting of the Council on Medical Education and Hospitals, Dec. 10, 1939, it was voted to omit the names of approved junior colleges from its compilation. This action was taken because the Council

(Continued on page 688)

TABLE 2.—Statistics of Recognized Medical Schools in the United States and Canada

Name and Location of School	Students by Classes, Session 1939-1940										Executive Officer		
	Preliminary Requirement by Years	Length of Course, Academic Years	1st Year	2d Year	3d Year	4th Year	5th Year or Intern Year	Totals	Graduates Since July 1, 1939	Session 1940-1941		Applications for Admission to the 1st Year Will Be Received Until	
										Begins 1940			Ends 1941
ARKANSAS													
1 *University of Arkansas School of Medicine, Little Rock.....	2	4	82	63	70	63	..	278	63	Sept. 25	June 10	Aug.	Stuart P. Cromer, M.D., Dean.....
CALIFORNIA													
2 University of California Medical School, Berkeley-San Francisco.....	3	5	63	60	62	56	58½	241	60	Aug. 26	May 24	Jan.	President Robert G. Sproul, LL.D., Acting Dean
3 College of Medical Evangelists, Loma Linda-Los Angeles.....	2	5	75	74	78	80	93½	316	101	Sept. 2	June 1	May	E. H. Risley, M.D., Dean, Loma Linda; W. E. Macpherson, M.D., Assoc. Dean, Los Angeles
4 University of Southern California School of Medicine, Los Angeles.....	3	5	54	50	50	48	44½	202	43	Sept. 16	June 7	March	Paul S. McKibben, Ph.D., Dean.....
5 Stanford University School of Medicine, Stanford University-San Francisco	3	5	60	60	60	60	56½	240	55	Sept. 24	June 15	April	Loren Roscoe Chandler, M.D., Dean.....
COLORADO													
6 University of Colorado School of Medicine, Denver.....	3	4	56	47	50	51	..	204	51	Sept. 23½	June 9	April	Maurice H. Rees, M.D., Dean.....
CONNECTICUT													
7 Yale University School of Medicine, New Haven.....	3	4	54	50	50	45	..	208	44	Sept. 23	June 11	March	Francis G. Blake, M.D., Acting Dean.....
DISTRICT OF COLUMBIA													
8 Georgetown University School of Medicine, Washington.....	Degree	4	77	92	77	80	..	326	80	Sept. 23	June 1	March	David V. McCauley, S.J., Ph.D., Dean.....
9 George Washington University School of Medicine, Washington.....	2	4	74	68	57	49	..	248	48	Sept. 23	June 11	.....	Walter A. Bloedorn, M.D., Dean.....
10 Howard University College of Medicine, Washington.....	2	4	26	36	24	33	..	119	33	Sept. 23	June 13	Sept.	Numa P. G. Adams, M.D., Dean.....
GEORGIA													
11 Emory University School of Medicine, Atlanta.....	3	4	64	51	54	50	..	219	50	Sept. 26	June 9	March	Russell H. Oppenheimer, M.D., Dean.....
12 University of Georgia School of Medicine, Augusta.....	3	4	50	48	36	32	..	163	33	Sept. 26	June 9	May	G. Lombard Kelly, M.D., Dean.....
ILLINOIS													
13 Loyola University School of Medicine, Chicago.....	3	5	80	66	60	97	121½	302	115	Sept. 16	June 11	.....	Louis D. Moorhead, M.D., Dean.....
14 Northwestern University Medical School, Chicago.....	3	5	133	120	138	145	145½	556	156	Oct. 14	June 14	March	Irving S. Cutler, M.D., Dean.....
15 University of Chicago, Rush Medical College.....	3	4	..	..	..	..	..	212½	103	Sept. 30	June 11	.....	Earle Gray, M.D., Acting Dean.....
16 University of Chicago, The School of Medicine.....	3	4	..	..	..	..	..	273½	35	Sept. 30½	June 11	Feb.	W. H. Taliaferro, Ph.D., Dean, Div. Biological Sciences; Victor Johnson, M.D., Dean Med. Stud.
17 University of Illinois College of Medicine, Chicago.....	3	5	171	159	147	159	174½	636	162	Sept. 23	June 6	July	David J. Davis, M.D., Dean.....
INDIANA													
18 Indiana University School of Medicine, Bloomington-Indianapolis.....	3	4	132	117	102	100	..	460	105	Sept. 11	June 2	May	Willis D. Gatch, M.D., Dean.....
IOWA													
19 State University of Iowa College of Medicine, Iowa City.....	3	4	87	54	81	71	..	233	71	Sept. 26	June 2	July	Ewen Murehison MacEwen, M.D., Dean.....
KANSAS													
20 University of Kansas School of Medicine, Lawrence-Kansas City.....	3	4	85	70	70	69	..	291	69	Sept. 19	June 9	June	H. R. Wahl, M.D., Dean.....
KENTUCKY													
21 University of Louisville School of Medicine, Louisville.....	2	4	93	74	90	84	..	341	84	Sept. 23	May 31	April	John Walker Moore, M.D., Dean.....
LOUISIANA													
22 Louisiana State University School of Medicine, New Orleans.....	3	4	103	103	75	70	61½	351	136	Sept. 9	May 31	.....	B. I. Burns, M.D., Dean.....
23 Tulane University of Louisiana School of Medicine, New Orleans.....	3	4	124	109	116	122	..	471	120	Sept. 26	June 11	.....	Maxwell E. Lapham, M.D., Dean.....
MARYLAND													
24 Johns Hopkins University School of Medicine, Baltimore.....	Degree	4	71	70	72	66	..	279	68	Sept. 21	June 3	June	Alan M. Chesney, M.D., Dean.....
25 University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore.....	3	4	95	83	92	100	..	370	100	Sept. 26	June 7	Sept.	H. Boyd Wylie, M.D., Acting Dean.....
MASSACHUSETTS													
26 Boston University School of Medicine, Boston.....	3	4	64	53	34	54	..	205	54	Sept. 26	June 10	April	Alexander S. Begg, M.D., Dean.....
27 Harvard Medical School, Boston.....	2	4	128	123	134	134	..	522	132	Sept. 23	June 19	March	C. Sidney Burwell, M.D., Dean.....
28 Tufts College Medical School, Boston.....	Degree	4	105	93	90	98	..	386	96	Sept. 18	June 15	Sept.	A. Warren Stearns, M.D., Dean.....
MICHIGAN													
29 University of Michigan Medical School, Ann Arbor.....	3	4	120	101	121	124	..	466	125	Sept. 30	June 21	March	A. C. Furstenberg, M.D., Dean.....
30 Wayne University College of Medicine, Detroit.....	3 & Degree	5	65	65	56	59	61½	245	60	Sept. 16	June 14	Feb.	Edgar H. Norris, M.D., Dean.....
MINNESOTA													
31 University of Minnesota Medical School, Minneapolis.....	3	5	120	107	108	119	136½	454	104	Sept. 30½	June 14	Jan.	Harold S. Diehl, M.D., Dean.....
MISSOURI													
32 St. Louis University School of Medicine, St. Louis.....	3	4	110	96	106	106	..	418	106	Sept. 24	June 1	Sept.	Alphonse M. Schwetalla, S.J., Ph.D., Dean.....
33 Washington University School of Medicine, St. Louis.....	4	4	82	72	64	67	..	345	95	Sept. 26	June 10	Sept.	Philip A. Shaffer, Ph.D., Dean.....

34	Credighton University School of Medicine, Omaha.....	3	4	60	51	63	57	77	..	231	57	Sept. 24	June 5	June	Charles M. Wilhelm, M.D., Dean.....	34
35	University of Nebraska College of Medicine, Omaha.....	3	4	95	71	77	77	..	320	76	Sept. 23	June 9	June	C. W. M. Poynter, M.D., Dean.....	35	
NEW YORK																
36	Albany Medical College, Albany.....	Degree	4	37	32	30	29	..	128	29	Sept. 9	June 9	Sept.	R. S. Cunningham, M.D., Dean.....	36	
37	Long Island College of Medicine, Brooklyn.....	3	4	97	90	86	81	..	354	81	Sept. 23	June 7	Sept.	Jean A. Curran, M.D., Dean.....	37	
38	University of Buffalo School of Medicine, Buffalo.....	2	4	71	64	66	58	..	250	56	Sept. 30	June 7	March	Edward W. Koch, M.D., Dean.....	38	
39	Columbia University College of Physicians and Surgeons, New York.....	3	4	107	97	106	103	..	413	102	Sept. 19	June 3	Feb.	Willard C. Rappleye, M.D., Dean.....	39	
40	Cornell University Medical College, New York.....	3 & Degree	4	80	75	66	71	..	292	70	Sept. 17	June 11	.....	William S. Ladd, M.D., Dean.....	40
41	New York Medical College, Flower and Fifth Avenue Hospitals, New York.....	Degree	4	81	81	67	49	..	278	50	Sept. 16	June 6	.....	Claude A. Burrett, M.D., President.....	41
42	New York University College of Medicine, New York.....	3	4	122	122	125	123	..	465	124	Sept. 18	June 11	Jan.	Currier McEwen, M.D., Dean.....	42	
43	University of Rochester School of Medicine and Dentistry, Rochester.....	3	4	57	50	48	45	..	200	45	Sept. 16	June 14	March	George H. Whipple, M.D., Dean.....	43	
44	Syracuse University College of Medicine, Syracuse.....	3	4	49	37	44	40	..	170	40	Sept. 16	June 2	.....	H. G. Weiskotten, M.D., Dean.....	44
NORTH CAROLINA																
45	Duke University School of Medicine, Durham.....	3	4	66	67	71	55	11	230	58	Oct. 3	June 6	April	Wilbur C. Davison, M.D., Dean.....	45	
OHIO																
46	University of Cincinnati College of Medicine, Cincinnati.....	3	5	80	71	76	76	65†	303	66	Sept. 20	June 6	March	Stanley Dorst, M.D., Dean.....	46	
47	Western Reserve University School of Medicine, Cleveland.....	3 & Degree	4	76	68	63	58	..	265	58	Sept. 19	June 11	Sept.	Torald Sollmann, M.D., Dean.....	47	
48	Ohio State University College of Medicine, Columbus.....	3	4	76	85	69	77	..	307	77	Oct. 1	June 16	June	John H. J. Upham, M.D., Dean.....	48	
OKLAHOMA																
49	University of Oklahoma School of Medicine, Oklahoma City.....	3	4	67	58	54	52	..	231	52	Sept. 16	June 9	Aug.	Robert U. Patterson, M.D., Dean.....	49	
OREGON																
50	University of Oregon Medical School, Portland.....	3	4	60	56	65	50	..	240	49	Oct. 1	June 10	March	Richard B. Dillehunt, M.D., Dean.....	50	
PENNSYLVANIA																
51	Hahnemann Medical College and Hospital of Philadelphia.....	3	4	140	135	130	129	..	543	127	Sept. 30	June 12	Sept.	William A. Pearson, M.D., Dean.....	51	
52	Jefferson Medical College of Philadelphia.....	Degree	4	134	117	120	126	..	497	125	Sept. 18	June 6	Sept.	Henry K. Mosler, M.D., Dean.....	52	
53	Temple University School of Medicine, Philadelphia.....	3	4	111	98	118	119	..	446	119	Sept. 18	June 12	Sept.	William N. Parkerson, M.D., Dean.....	53	
54	University of Pennsylvania School of Medicine, Philadelphia.....	3	4	120	106	128	137	..	491	134	Sept. 23	June 11	March	William Poynter, M.D., Dean.....	54	
55	Woman's Medical College of Pennsylvania, Philadelphia.....	3	4	34	26	25	18	..	103	18	Sept. 18	June 11	Aug.	Catharine Macfarlane, M.D., Interim Dean.....	55	
56	University of Pittsburgh School of Medicine, Pittsburgh.....	2	4	83	74	54	46	..	257	46	Sept. 23	June 11	March	William S. McElroy, M.D., Dean.....	56	
SOUTH CAROLINA																
57	Medical College of the State of South Carolina, Charleston.....	3	4	44	41	45	41	..	171	40	Sept. 26	June 5	March	Robert Wilson, M.D., Dean.....	57	
TENNESSEE																
58	University of Tennessee College of Medicine, Memphis.....	2	4	142	87	114	96	..	439	96	July 5†	June 7	.....	O. W. Hyman, Ph.D., Dean.....	58
59	McLerray Medical College, Nashville.....	3	4	58	51	48	39	..	190	39	Oct. 1	May 27	March	Edward L. Turner, M.D., Dean.....	59	
60	Vanderbilt University School of Medicine, Nashville.....	3 & Degree	4	51	46	51	52	..	200	54	Sept. 23	June 11	.....	Waller S. Leathers, M.D., Dean.....	60
TEXAS																
61	Baylor University College of Medicine, Dallas.....	3	4	84	75	71	75	..	305	75	Sept. 30	June 2	.....	Walter H. Moursund, M.D., Dean.....	61
62	University of Texas School of Medicine, Galveston.....	3	4	100	91	87	87	..	374	90	Oct. 1	May 31	June	John W. Spies, M.D., Dean.....	62	
VERMONT																
63	University of Vermont College of Medicine, Burlington.....	3	4	32	32	31	30	..	131	36	Sept. 18	June 16	May	Hardy A. Kemp, M.D., Dean.....	63	
VIRGINIA																
64	University of Virginia Department of Medicine, Charlottesville.....	3	4	72	64	53	65	..	254	62	Sept. 12	June 9	May	Harvey E. Jordan, Ph.D., Dean.....	64	
65	Medical College of Virginia, Richmond.....	3	4	80	76	72	67	..	225	66	Sept. 3	June 3	.....	Lee E. Sutton, Jr., M.D., Dean.....	65
WISCONSIN																
66	University of Wisconsin Medical School, Madison.....	3	4	80	72	52	49	..	202	48	Sept. 25	June 23	March	William S. Middleton, M.D., Dean.....	66	
67	Marquette University School of Medicine, Milwaukee.....	3	5	91	80	70	72	72†	313	72	Sept. 30	June 11	.....	Eben J. Carey, M.D., Dean.....	67
CANADA																
68	University of Alberta Faculty of Medicine, Edmonton, Alta.....	1	6	38	40	34	43	42†	223	35	Sept. 24	May 13	Aug.	John James Over, M.D., Acting Dean.....	68	
69	University of Manitoba Faculty of Medicine, Winnipeg, Man.....	2	5	58	49	50	61	46†	218	45	Sept. 10	May 14	April	A. T. Mathers, M.D., Dean.....	69	
70	Dalhousie University Faculty of Medicine, Halifax, N. S.....	2	5	50	48	40	45	37†	183	35	Sept. 20	May 13	.....	H. G. Grant, M.D., Dean.....	70
71	Queen's University Faculty of Medicine, Kingston, Ont.....	1	6	42	46	46	42	45†	278	32	Sept. 26	May 17	Aug.	Frederick Etherington, M.D., Dean.....	71	
72	University of Western Ontario Medical School, London, Ont.....	1	6	53	38	31	37	30†	223	31	Sept. 16	May 17	Aug.	R. J. H. Campbell, M.D., Dean.....	72	
73	University of Toronto Faculty of Medicine, Toronto, Ont.....	1	6	148	125	117	118	137†	777	138	Sept. 24	May 17	Sept.	W. E. Gable, M.D., Dean.....	73	
74	McGill University Faculty of Medicine, Montreal, Que.....	3	4	97	94	90	87	76†	441	101	Sept. 24	May 31	March	J. C. Simpson, M.D., Dean.....	74	
75	University of Montreal Faculty of Medicine, Montreal, Que.....	Degree	5	51	49	50	55	49†	203	48	Sept. 15	June 15	Sept.	Albert LeSage, M.D., Dean.....	75	
76	Laval University Faculty of Medicine, Quebec, Que.....	Degree	5	85	46	68	57	53	314	51	Sept. 11	May 30	.....	Rev. Almé Labrie, Secretary-General, U. Laval.....	76

Statistics of Recognized Schools of the Basic Medical Sciences will be found in table 3, page 688.

Statistics of Recognized Schools of the Basic Medical Sciences will be found in table 3, page 688.

* On probation since Dec. 4, 1933.
 ** Enrolment not on above table by classes for the two medical schools of the University of Chicago.
 † Fifth year (internship) enrolment not included in the total column.
 ‡ Fifth year discontinued beginning with the class of 1940; one year internship required to be eligible for licensing examinations.
 § Students admitted at different times of the year: Colorado, advanced students beginning of 2d or 3d quarters; Northwestern, beginning of any quarter; University of Chicago, spring and summer quarters; Minnesota, winter quarter (freshmen only); Tennessee, Sept. 23, Dec. 30, 1930, and March 20, 1931.

(Continued from page 685)

itself recommends three years of college preliminary to entrance into medical school and because all but a negligible percentage of medical students have actually taken three years or more in college. Under these conditions the medical schools are selecting their students from among those candidates who are already enrolled in colleges of arts and sciences which offer the full four year course leading to a bachelors' degree. One hundred and thirty-three junior colleges were included in the last published list.

There are 671 colleges of arts and sciences, exclusive of junior colleges, approved by the standardizing agencies, distributed as follows:

Association of American Universities.....	291
North Central	249
Southern	180
Middle States	124
Northwest	57
New England	44

Of those recognized by the Association of American Universities, all but seventeen are approved also by

the end of the first year in medicine, three years, two and one-half years and two years. The nine schools which have a stated two year requirement for the session 1940-1941 are the Universities of Arkansas, Medical Evangelists, George Washington, Howard, Louisville, Harvard, Buffalo, Pittsburgh and Tennessee. Creighton University School of Medicine and Meharry Medical College have increased their prerequisite for the forthcoming session to three years.

The general trend toward three or more years of college work would appear to be due to a desire for more thorough grounding in all the branches of chemistry and greater familiarity with nonscience subjects, such as literature, history or economics. In table 4 it will be noted that actually only 2 per cent of the entire freshman class of 1939-1940 were admitted with less than three years. Of the eleven schools with a two year requirement, two admitted none on this basis, two admitted one each, two admitted three each and one accepted nine students. One hundred entered four schools, although in each case they represent less

TABLE 3.—Statistics of Recognized Schools of the Basic Medical Sciences in the United States and Canada

Name and Location of School	1940-1941 Preliminary Requirement by Years	Length of Course Academic Years	Students by Classes, Session 1939-1940			Session 1940-1941		Applications for Admission to the 1st Year Will Be Received Until	Executive Officer	
			1st Year	2d Year	Totals	Begins 1940	Ends 1941			
ALABAMA										
1 University of Alabama School of Medicine, University (Tuscaloosa)	3	2	63	50	103	Sept. 11	May 27	.....	Stuart Graves, M.D., Dean.....	1
MISSISSIPPI										
2 University of Mississippi School of Medicine, University	3	2	23	21	44	Sept. 16	June 2	Aug.	B. S. Guyton, M.D., Dean.....	2
MISSOURI										
3 University of Missouri School of Medicine, Columbia	3	2	41	34	75	Sept. 16	June 13	June	Dudley S. Conley, M.D., Dean....	3
NEW HAMPSHIRE										
4 Dartmouth Medical School, Hanover	3 & Degree	2	20	22	42	Sept. 19	June 13	Feb.	John P. Bowler, M.D., Dean....	4
NORTH CAROLINA										
5 University of North Carolina School of Medicine, Chapel Hill	3	2	42	37	79	Sept. 24	June 8	Sept.	W. Reese Berryhill, M.D., Acting Dean	5
6 Wake Forest College School of Medical Sciences, Wake Forest	3	2	33	27	60	Sept. 10	June 2	Sept.	C. C. Carpenter, M.D., Dean....	6
NORTH DAKOTA										
7 *University of North Dakota School of Medicine, Grand Forks	3	2	25	24	49	Sept. 16	June 10	Sept.	H. E. French, M.D., Dean.....	7
SOUTH DAKOTA										
8 *University of South Dakota School of Medical Sciences, Vermillion	3	2	26	24	50	Sept. 18	June 9	July	Joseph C. Ohlmacher, M.D., Dean	8
UTAH										
9 University of Utah School of Medicine, Salt Lake City	3	2	30	26	56	Sept. 23	May 31	Feb.	L. L. Daines, M.D., Dean.....	9
WEST VIRGINIA										
10 West Virginia University School of Medicine, Morgantown	3	2	25	20	45	Sept. 17	June 7	Sept.	Edward J. Van Liere, M.D., Dean	10
CANADA										
11 University of Saskatchewan School of Medical Sciences, Saskatoon, Sask.	2	2	24	24	48	Sept. 23	May 9	May	W. S. Lindsay, M.B., Dean.....	11

* On probation since May 13, 1939.

their district agency. In the various groups this dual approval of 274 institutions is apportioned as follows:

North Central	103
Southern	59
Middle states	63
New England	31
Northwest	18

The five regional associations of colleges referred to cover among them the entire United States with the exception of the far Southwest. Institutions in this area can secure only the approval of the national group—the Association of American Universities.

For the session 1939-1940, sixty-six of the seventy-seven medical schools in the United States had a premedical prerequisite in excess of the minimum. For 1940-1941 only nine schools will admit students with less than three years of preparation. In table 1 are tabulated for five sessions the figures indicating the trend toward increasing admission requirements with the number of schools requiring a degree, four years, three years if the baccalaureate degree is conferred in absentia at

than 50 per cent of the freshman class. In 1936-1937, 12.5 per cent of the entering class had only the minimum of preliminary education, but by 1938-1939 the number had dropped to 3.8 per cent and in 1939-1940 to 2.0 per cent.

The faculties of medicine in Canada vary in their premedical requirement. For the session 1940-1941 two require a degree for admission to a five year course; four have a six year medical course preceded by senior matriculation which is equivalent to the work of the first year in a college of arts and three, including one school offering courses in the basic sciences, require two years, and one school requires three years before beginning a four year course. A table appears later in this study which records the number of graduates of 1940 holding baccalaureate degrees (table 18).

With but five exceptions, namely California, Connecticut, Massachusetts, Missouri and Nebraska, the state licensing boards require two years of preliminary college training. The law in Massachusetts will change

in 1941. Although their statutes do not include the two year college requirement, these states with the exception of Massachusetts do not license other than graduates of approved schools. Alaska, Hawaii and Puerto Rico likewise require two years of preliminary training. The requirement of the medical licensing board of each state is shown in table 5.

DURATION OF MEDICAL COURSE

The medical course in the United States in general is taught in four years of approximately thirty-two weeks each. Fifty-two offer such a course. The medical schools of the Universities of Northwestern, Minnesota, Duke and Tennessee operate on the quarter system, permitting a student by utilizing the summer months to decrease the length of time necessary to obtain a degree. A considerable number of the students of these schools do not elect to study during the summer months. The medical schools of the University of Chicago are operated on a plan of individual promotion permitting a student to advance as rapidly as he desires, but the great majority complete the course in twelve quarters. Medical practice acts of certain states, however, specify a four year professional course and it is advisable that students should assure themselves concerning the legal interpretation of the phrase.

Fifty-six schools require a four year course, while eleven, including those operated on the quarter plan, require four years of systematic instruction followed by a fifth year spent as an intern or in research work.

Ten schools in the United States and one in Canada offer only the first two years of the medical curriculum and are designated as schools of the basic medical sciences. For the most part these schools are located in smaller communities where the clinical material required for teaching is almost wholly lacking. In some instances, facilities for the satisfactory teaching of such subjects as physical diagnosis and gross pathology must be sought at a distance from the school. Introductory courses in medicine and surgery, which commonly form a part of the second year schedule, may be similarly handicapped. A study of the problem led to the adoption in February 1937 of this policy, which became effective July 1, 1939. For these reasons the Council

In subsequent tabulations the figures for the two groups are combined in an effort to present the picture of medical education as a whole.

MEDICAL SCHOOL SURVEY

During the academic years 1934-1936 a resurvey of all medical schools in the United States and Canada was made by the Council. Dr. Herman G. Weiskotten,

TABLE 5.—*Preliminary Training Required by Licensing Boards*

Two Years of College		
Alabama	Louisiana	Oregon
Alaska	Maine	Pennsylvania
Arizona	Maryland	Puerto Rico
Arkansas	Michigan	Rhode Island
Colorado	Minnesota	South Carolina
Delaware	Mississippi	South Dakota
District of Columbia	Montana	Tennessee
Florida	Nevada	Texas
Georgia	New Hampshire	Utah
Hawaii	New Jersey	Vermont
Idaho	New Mexico	Virginia
Illinois	New York	Washington
Indiana	North Carolina	West Virginia
Iowa	North Dakota	Wisconsin
Kansas	Ohio	Wyoming
Kentucky	Oklahoma	
One Year of College		
California		Connecticut
High School Graduation or Its Equivalent		
Massachusetts	Missouri	Nebraska

dean of Syracuse University College of Medicine, visited all schools in company with a representative of the Council, the Association of American Medical Colleges or the Federation of State Medical Boards. Three days was customarily spent at each school. Some time before each school was visited, a set of questionnaires was sent including reports by the dean on the organization and administration of the school, the clinical facilities and hospital relationships, and each department in the school, including the library. These questionnaires called for information on departmental organization, staff, facilities, hours in the medical curriculum, methods of conducting courses, research, relationship with other departments, and budget. There was also provided a separate personal history form for every member of the faculty holding the rank of assistant professor and above. This called for an outline of training and experience, scientific society memberships, participation in scientific programs, publications, proportion of time devoted to teaching and research, and participation in community programs related to the field of medicine. The questionnaires were usually not examined before a school was visited, thus enabling those visiting the school to get a more objective picture. However, all questionnaires were carefully studied before an evaluation was made. Careful notes were kept of the inspections. All data dealing with the survey, including the questionnaires, notes on the visits, laboratory outlines, literature dealing with the conduct of courses, published reports and catalogues are filed in the office of the Council.

To all schools there was sent a confidential report in graphic form, referred to as a pattern map. This method, which had already proved its usefulness to the North Central Association of Colleges and Secondary Schools, was adapted by the Council to suit its own needs. The sixty-six four year medical schools in the United States, arranged in rank order with

(Continued on page 692)

TABLE 4.—*First Year Students Admitted with Less than Three Years of College Preparation*

	Number of Schools With Two Year Requirement	Percentage of Students
1936-1937.....	32	12.5
1937-1938.....	27	7.4
1938-1939.....	19	3.8
1939-1940.....	11	2.0

in giving its approval to schools of the basic medical sciences assumes no responsibility for the character of those courses which involve the use of clinical material.

Four of the medical schools of Canada offer a five year course, four have a six year course, one offers four years and there is one school of the basic sciences, referred to in the preceding paragraph. Three Canadian schools require an internship for graduation.

These data are shown in tables 2 and 3, listing separately:

1. Recognized medical schools in the United States and Canada.
2. Recognized schools of the basic medical sciences in the United States and Canada.

TABLE 6.—Birth Place

Marginal Number	Alabama	Arizona	Arkansas	California	Colorado	Connecticut	Delaware	Dist. of Columbia	Florida	Georgia	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana	Maine	Maryland	Massachusetts	Michigan	Marginal Number
1 University of Alabama School of Medicine.....	71	2	1	1	1	1	1	1	3	5	2	2	2	1	9	1	6	1	1	2	1	1
2 University of Arkansas School of Medicine.....	2	167	1	1	1	1	1	1	3	1	1	1	1	1	1	1	1	1	1	1	1	2
3 University of California Medical School.....	2	2	123	1	1	1	1	1	1	1	1	10	2	2	2	4	1	1	1	1	1	3
4 College of Medical Evangelists.....	1	4	1	50	12	1	1	5	5	2	5	12	4	6	2	3	2	1	1	1	1	4
5 Univ. of Southern California School of Medicine..	1	4	1	72	7	1	1	1	2	2	1	9	4	6	2	2	1	1	1	1	1	5
6 Stanford University School of Medicine.....	1	1	1	130	3	2	1	1	2	2	1	2	1	2	2	1	1	1	1	1	1	6
7 University of Colorado School of Medicine.....	2	2	6	111	2	1	1	1	1	1	5	4	3	7	1	1	1	1	1	1	1	7
8 Yale University School of Medicine.....	1	1	8	3	42	1	1	1	2	1	4	4	1	2	1	1	1	1	1	1	1	8
9 Georgetown University School of Medicine.....	1	1	3	13	23	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	9
10 George Washington University School of Medicine	2	1	8	1	6	53	1	1	2	2	5	1	1	1	1	1	1	1	1	1	1	10
11 Howard University College of Medicine.....	3	1	2	2	1	10	1	1	8	1	2	2	1	1	1	2	2	1	1	1	1	11
12 Emory University School of Medicine.....	16	1	1	1	1	1	1	1	30	137	1	1	1	1	1	1	1	1	1	1	1	12
13 University of Georgia School of Medicine.....	4	1	1	1	1	1	1	1	2	141	1	1	1	1	1	1	1	1	1	1	1	13
14 Loyola University School of Medicine.....	1	1	8	1	1	7	1	1	1	1	1	144	12	9	1	1	1	1	1	1	1	14
15 Northwestern University Medical School.....	6	5	3	22	5	1	1	1	3	1	17	161	15	15	18	5	1	1	1	1	1	15
16 University of Chicago, Rush Medical College.....	4	1	2	1	1	1	1	1	2	8	37	2	3	4	1	1	1	1	1	1	1	16
17 University of Chicago, The School of Medicine.....	1	1	1	10	1	2	1	1	1	6	109	12	10	5	2	2	2	2	2	2	2	17
18 University of Illinois College of Medicine.....	1	1	1	1	1	1	1	1	1	1	502	10	8	2	2	1	1	1	1	1	1	18
19 Indiana University School of Medicine.....	1	1	1	1	1	1	1	1	1	1	2	447	2	2	1	1	1	1	1	1	1	19
20 State University of Iowa College of Medicine.....	1	1	1	2	1	1	1	1	1	1	1	2	225	1	1	1	1	1	1	1	1	20
21 University of Kansas School of Medicine.....	1	1	1	5	1	1	1	1	1	1	1	6	1	1	184	2	1	1	1	1	1	21
22 University of Louisville School of Medicine.....	4	1	2	1	3	1	1	1	1	1	3	8	28	2	1	146	1	1	1	1	1	22
23 Louisiana State University School of Medicine.....	9	5	3	1	1	1	1	1	6	5	7	1	3	3	4	7	188	1	1	1	1	23
24 Tulane University of Louisiana School of Medicine	48	6	9	2	1	1	1	1	46	11	1	1	1	2	15	111	1	1	1	1	1	24
25 Johns Hopkins University School of Medicine.....	3	1	9	2	6	5	4	1	8	2	3	4	2	3	4	2	6	52	15	4	2	25
26 University of Maryland School of Medicine.....	1	1	4	10	1	4	2	5	4	2	4	2	1	1	1	1	148	4	2	2	2	26
27 Boston University School of Medicine.....	1	1	1	1	8	1	1	1	1	1	1	2	1	1	1	1	19	1	125	1	27	27
28 Harvard Medical School.....	4	1	2	13	9	20	6	2	7	2	26	7	8	5	3	1	8	3	103	9	28	28
29 Tufts College Medical School.....	1	1	1	1	1	1	1	1	1	1	1	3	1	1	1	1	20	1	263	1	29	29
30 University of Michigan Medical School.....	2	1	5	3	3	1	2	2	3	2	22	12	6	4	1	1	1	1	242	3	30	30
31 Wayne University College of Medicine.....	1	1	1	1	2	1	1	1	1	1	5	3	5	1	1	1	6	150	31	1	31	31
32 University of Minnesota Medical School.....	2	2	2	2	1	1	1	1	1	2	8	2	7	2	1	1	1	2	4	32	32	32
33 University of Mississippi School of Medicine.....	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	33
34 University of Missouri School of Medicine.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	34
35 St. Louis University School of Medicine.....	1	2	21	2	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	35
36 Washington University School of Medicine.....	16	4	20	5	1	2	1	1	1	6	33	3	4	15	9	1	1	1	1	1	1	36
37 Creighton University School of Medicine.....	1	1	62	1	1	1	1	1	1	1	1	23	9	1	1	1	1	1	1	1	1	37
38 University of Nebraska College of Medicine.....	1	1	2	2	1	1	1	1	1	6	3	15	5	1	1	1	1	1	1	1	1	38
39 Dartmouth Medical School.....	1	1	5	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	39
40 Albany Medical College.....	1	1	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	40
41 Long Island College of Medicine.....	1	1	2	13	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	41
42 University of Buffalo School of Medicine.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	42
43 Columbia Univ. College of Physicians & Surgeons	4	1	2	5	3	17	1	4	1	4	1	11	4	1	1	1	1	7	3	28	2	43
44 Cornell University Medical College.....	1	2	7	11	1	5	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	44
45 New York Medical College.....	1	1	3	12	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	45
46 New York University College of Medicine.....	3	1	11	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	46
47 Univ. of Rochester Sch. of Med. and Dentistry....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	47
48 Syracuse University College of Medicine.....	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	48
49 University of North Carolina School of Medicine	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	49
50 Duke University School of Medicine.....	6	1	1	6	1	4	3	5	7	11	8	2	3	1	1	1	1	1	1	1	1	50
51 Wake Forest College School of Medical Sciences...	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	51
52 University of North Dakota School of Medicine...	3	1	5	3	1	1	1	1	1	5	13	1	1	1	1	1	1	1	1	1	1	52
53 University of Cincinnati College of Medicine.....	1	1	6	2	1	1	1	1	1	2	2	4	1	1	1	1	1	1	1	1	1	53
54 Western Reserve University School of Medicine...	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	54
55 Ohio State University College of Medicine.....	4	1	4	2	3	1	1	1	1	1	1	5	2	13	1	1	1	1	1	1	1	55
56 University of Oklahoma School of Medicine.....	1	1	4	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	56
57 University of Oregon Medical School.....	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	57
58 Hahnemann Medical College.....	1	1	1	9	6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	58
59 Jefferson Medical College of Philadelphia.....	3	1	3	4	9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	59
60 Temple University School of Medicine.....	1	2	3	6	3	7	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	60
61 University of Pennsylvania School of Medicine...	9	1	2	2	2	1	2	3	1	5	3	4	4	3	1	1	1	1	1	1	1	61
62 Woman's Medical College of Pennsylvania.....	1	1	3	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	62
63 University of Pittsburgh School of Medicine.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	63
64 Medical College of the State of South Carolina...	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	64
65 Univ. of South Dakota School of Medical Sciences	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	65
66 University of Tennessee College of Medicine.....	17	12	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	66
67 Meharry Medical College.....	9	4	1	1	1	7	12	20	4	1	1	1	1	1	1	1	1	1	1	1	1	67
68 Vanderbilt University School of Medicine.....	15	4	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	68
69 Baylor University College of Medicine.....	3	2	8	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	69
70 University of Texas Faculty of Medicine.....	1	1	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	70
71 University of Utah School of Medicine.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	71
72 University of Vermont College of Medicine.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	72
73 University of Virginia Department of Medicine...	7	1	1	3	2	3	2	4	1	1	1	1	1	1	1	1	1	1	1	1	1	73
74 Medical College of Virginia.....	1	1	5	1	2	2	3	2	4	1	1	2	2	1	1	1	1	1	1	1	1	74
75 West Virginia University School of Medicine...	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	75
76 University of Wisconsin Medical School.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	76
77 Marquette University School of Medicine.....	1	1	13	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	77
78 University of Alberta Faculty of Medicine.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	78
79 University of Manitoba Faculty of Medicine.....	1	1	1	1</																		

of Students

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(Continued from page 689)

respect to ninety-six items, served as the basis of these charts. For the schools offering instruction only in the basic sciences and for the medical schools of Canada, similar graphs were prepared, each school being placed in the same decile rank as other schools with approximately the same evaluation.

A committee of the Council consisting of Dr. Weiskotten, Alphonse M. Schwitalla, S.J., Ph.D., Dean, St. Louis University School of Medicine, William D. Cutter, M.D., Secretary, and Hamilton H. Anderson, M.D., a member of the staff, Council on Medical Education and Hospitals, prepared a final report which was released in January 1940. This publication is entitled "Medical Education in the United States, 1934-1939,"¹ Without naming individual schools, the report describes in general terms the organization and administration, the faculty and student personnel, and the clinical and financial resources of the medical schools, thus presenting an objective picture of medical education in this country for the years under review. In this way it was believed that faculties and administrative officers may learn what other schools are doing, emulating that which is good and avoiding that which experience has shown to be unprofitable.

DEVELOPMENTS IN MEDICAL EDUCATION

Reports received from a large number of medical schools and follow-up inspections of many indicate that, as a result of the Council's survey, substantial improvements have been and are being made. Where facilities were inadequate the size of classes has been reduced, entrance requirements have been raised, the teacher-student ratio in the basic medical science departments in 1939 was 1:8 as compared to 1:11 in 1934, clinical facilities have been improved, budgets have increased and curriculums have been revised.

In summary the report¹ declares that "Some of the most important changes and significant improvements of recent years do not lend themselves to statistical treatment. Imponderables still count heavily. In some institutions administrative reorganizations have greatly strengthened personnel and educational programs. In such efforts the Council has cooperated and in some instances has aided substantially in securing for the schools from trustees or legislative bodies greater financial and administrative support. The procedure of the Council has been different from what it was in 1905-1910 for the reason that the whole picture of medical education is radically different from what it was thirty years ago. Even the weakest of the medical schools at the time of this survey was a stable institution as compared with the numerous proprietary schools and diploma mills in existence at the time that the Council was created. Rather than to publicly proclaim their deficiencies, therefore, it seemed wiser to give aid and encouragement to those schools which needed help, in the hope that within a reasonable period they would be able to conform to the current standards of medical education. This expectation has been justified by the achievements of the past three or four years during which the Council has been able to stimulate greater interest in medical schools on the part of their universities; to assist administrative officers in the solution of their problems of organization and personnel; to assist in securing satisfactory hospital relationships; to foster the development of more modern educational programs

and stimulate curricular studies by faculty groups, and to secure greater financial and public support. In all of these ways and many others the cause of medical education has been promoted, its standards advanced and its purposes more nearly achieved."

Since the Council's first classification of medical schools and the publication of the Carnegie report,² there has been probably no five year period which has witnessed such activity and progress in the field of medical education.

CURRICULUM

The standard curriculum recognized by the Council on Medical Education and Hospitals and contained in its Essentials of an Acceptable Medical School consists of from 3,600 to 4,400 distributed as from 900 to 1,000 hours a year and grouped under nine headings: anatomy, including histology and embryology; physiology; biochemistry; pathology, bacteriology and immunology; pharmacology; hygiene and sanitation; general medicine; general surgery, and obstetrics and gynecology. A certain percentage of hours of the whole number of hours in the courses is required in each of these groups.

APPROVAL OF SCHOOLS IN CANADA

On June 24, 1937, at a meeting in Ottawa, Ont., Canada, at which representatives of the medical schools in Canada and the assistant secretary of the Canadian Medical Association were present, the secretary speaking for the Council on Medical Education and Hospitals discussed the survey of Canadian medical schools made during 1934-1936 and inquired as to the policy to be adopted in the future—that is, whether the American Medical Association should continue the grading of medical schools in Canada or whether they would prefer that the medical schools themselves or some other body take over this task. The problem was referred to the Canadian Medical Association.

At its sixty-ninth annual meeting in June 1938 the Committee on Medical Education of the Canadian Medical Association brought in a report which was accepted by the members of the General Council of the Canadian Medical Association and reads, in part, as follows:

"In the event of the Council on Medical Education of the American Medical Association publishing a list of approved schools, those Canadian schools wishing their inspection and approval could request this inspection. This would leave each school free to deal directly with the Council on Medical Education of the American Medical Association and thus obviate misunderstandings.

"There seems to be a fairly uniform opinion expressed by the various medical schools in Canada that the Canadian Medical Association should share some responsibility in this country so far as medical education is concerned. The majority of the schools, however, feel that the aims and purposes of the Canadian Medical Association are not primarily those of undergraduate medical education, which is largely a problem of the schools themselves. However, it was recommended that, if the Council on Medical Education and Hospitals of the American Medical Association in the future conduct similar surveys at five or ten year intervals, such as the recent survey, the Canadian schools take advantage of and be included in this survey. Those schools which are members of the Association of American Medical Colleges could have a representative from

1. Weiskotten, H. G.; Schwitalla, A. M.; Cutter, W. D., and Anderson, H. H.: *Medical Education in the United States*, Chicago, American Medical Association, 1940.

2. *Medical Education in the United States and Canada*, Carnegie Foundation for the Advancement of Teaching, 1910.

this association included in the personnel of the inspection. The remaining schools which are not members of the Association of American Medical Colleges could ask to have a member of the Association of American Medical Colleges included in the inspecting personnel, or some representative from the Committee on Medical Education of the Canadian Medical Association."

It would appear from the foregoing that the approval of Canadian medical schools by the Council on Medical Education and Hospitals of the American Medical Association rests with the schools themselves.

The Council on Medical Education and Hospitals at a meeting in St. Louis on May 13, 1939, voted that after Jan. 1, 1945, the Canadian medical schools will be included in the Council's classification only at their own request.

STATISTICS OF MEDICAL SCHOOLS AND SCHOOLS OF THE BASIC MEDICAL SCIENCES

Medical schools and schools of the basic medical sciences approved by the Council on Medical Education and Hospitals during 1939-1940 are listed in tables 2 and 3, pages 686 and 688. Recorded therein is the preliminary requirement for the session 1940-1941 by years, the length of the medical course by years, enrolment by classes for the session 1939-1940, including fifth year students interning or engaged in research, total attendance, the number of graduates since July 1, 1939, the dates of the beginning and ending of the forthcoming session, the month until which applications for admission to the freshman class are received and the name of the dean or executive officer. Three schools on probation are indicated by an asterisk preceding the name. There have been no changes in the classification of any medical school since the publication of the educational statistics in 1939. Also contained in the footnotes are references to the fifth and sixth year enrolments and names of the schools which admit students at varying times during the year. The fifth year (internship) enrolment is not included in the column giving the total number of students by classes. At Louisiana State University Medical Center the fifth or intern year was discontinued beginning with the class of 1940 but there were sixty-four students who completed the four year course in 1939 and were awarded degrees in 1940 on completion of the internship, but seventy-two students who completed four years in 1940 were awarded degrees without serving an internship. Duke University School of Medicine requires a two year internship after graduation. The number in hospitals during this period are also included in a footnote. The two medical schools of the University of Chicago do not report their students by classes, and in this tabulation therefore only the total enrolment is given. The fifth, or intern, year was also discontinued by McGill University Faculty of Medicine with the class of 1940, but the school will maintain a record of those who intern, since it is a requirement for medical licensure.

Similar data pertaining to the schools of the basic medical sciences are given in table 3. The data presented in tables 2 and 3 constitute the basis also for several of the subsequent tabulations, and beginning on page 701 are given historical information and essential facts concerning the schools arranged by states.

Sixty-seven medical schools in the United States and nine faculties of medicine of Canada are listed; also ten schools of the basic medical sciences in the United States and one in Canada. All but three of these schools at the present time enjoy the approval of the

Council, the three being on probation. In eighty-five schools 6,445 freshmen students were enrolled, 5,735 sophomores, 5,447 juniors, 5,439 seniors, 388 fifth year and 255 sixth year students during the session just ended. In the two medical schools of the University of Chicago 485 students were enrolled, making a total of 24,194 in the eighty-seven schools listed. In the United States there were 5,794 freshmen, 5,177 sophomores, 4,921 juniors, 4,894 seniors and the 485 students of the University of Chicago, a total of 21,271. The total number of students in the United States registered by classes, including fifth or intern year students, was 22,423. The enrolment in the schools of the basic medical sciences in the United States numbered 603, of which 318 were freshmen and 285 sophomores. The enrolment in the ten Canadian schools was first year 651, second year 558, third years 526, fourth year 545, fifth year 388 and sixth year 255, a total of 2,923. In the one school of the basic medical sciences in Canada there were forty-eight students: twenty-four freshmen and twenty-four sophomores.

Medical students enrolled in institutions in the United States and Canada numbered 24,194, exclusive of 1,152 fifth year students in the United States interning or engaged in research and 132 in Canada interning as a requirement for the degree of Doctor of Medicine or in order to be eligible for licensure.

Since July 1, 1939, 5,703 received the degree of Doctor of Medicine, 5,097 from schools in the United States and 606 from Canadian institutions.

There were also 108 part time, 228 special and 606 physicians or graduate students studying in medical schools.

With one exception the schools of the basic medical sciences had an enrolment of considerably less than 100. The lowest enrolment among the regular medical schools was 103 students at the Woman's Medical College of Pennsylvania and the highest 777 at the University of Toronto Faculty of Medicine. The correspondingly high figure among schools in the United States was 636 enrolled at the University of Illinois College of Medicine.

Eleven schools, exclusive of those of the basic medical sciences, matriculated 200 or less, thirty-two between 201 and 300, sixteen from 301 to 400, twelve from 401 to 500, and three from 501 to 600. Two schools matriculated more than 600. The smallest enrolment (forty-two) was at Dartmouth Medical School, where twenty freshmen and twenty-two sophomores were enrolled. This school does not offer the complete medical course.

The Woman's Medical College likewise graduated the lowest number, eighteen. The school granting degrees to the greatest number was the University of Illinois College of Medicine, which awarded 162 diplomas. Twenty-three schools granted degrees to classes of fewer than fifty students, thirty-three schools graduated between fifty-one and 100 each, seventeen from 101 to 150 and three less than 200 but more than 150.

The majority of schools will begin the session 1940-1941 about the middle of September and complete the year's work early in June.

Seventy schools replied to the inquiry regarding the month until which applications for admission to the first year class will be received. Seventeen replied March, sixteen September, seven each June and August, six each April and May, five February and three each January and July.

In reply to the question "Is a deposit required with application?" fifty-eight schools reported "no" while twenty-seven gave an affirmative answer. Of the latter, eight indicated the fee was returnable and nineteen that it was not. Fifteen required with the application a deposit of \$5 or less and twelve reported from \$10 to \$100, i. e. one reports \$10, two \$20, four \$25, four \$50 and one \$85, while three of these schools had a nonresident fee of \$25, \$50 and \$100 respectively. Of those requiring a deposit of \$20 or more, four indicated that the fee was not returnable and made no comment, one stated that it was not returnable if the student accepts an appointment in another medical school, and another stated it was returnable if notice of withdrawal

TABLE 7.—Students Classified by Birth Place

	Schools	Attending School in State of Birth	Birth Place Elsewhere
Alabama.....	1	71	32
Arkansas.....	1	167	111
California.....	4	330	619
Colorado.....	1	111	93
Connecticut.....	1	42	166
District of Columbia.....	3	86	607
Georgia.....	2	278	107
Illinois.....	5	953	1,026
Indiana.....	1	447	13
Iowa.....	1	225	68
Kansas.....	1	184	110
Kentucky.....	1	146	195
Louisiana.....	2	299	523
Maryland.....	2	200	449
Massachusetts.....	3	491	622
Michigan.....	2	392	319
Minnesota.....	1	326	128
Mississippi.....	1	36	8
Missouri.....	3	231	607
Nebraska.....	2	277	274
New Hampshire.....	1	6	36
New York.....	9	1,677	912
North Carolina.....	3	158	240
North Dakota.....	1	34	15
Ohio.....	3	590	285
Oklahoma.....	1	142	89
Oregon.....	1	89	151
Pennsylvania.....	6	1,349	988
South Carolina.....	1	153	18
South Dakota.....	1	24	26
Tennessee.....	3	273	562
Texas.....	2	541	138
Utah.....	1	42	14
Vermont.....	1	81	50
Virginia.....	2	285	264
West Virginia.....	1	39	6
Wisconsin.....	2	311	264
Canada.....	10	2,449	474
Totals.....	87	13,585	10,609

is given in time to permit the vacancy to be filled. Four schools stated that an acceptance fee of \$50 was required.

BIRTH PLACE OF STUDENTS

The birth state of students in attendance in medical schools during 1939-1940 is shown in table 6, pages 690 to 691. The greatest number of students registered, 2,766, according to state of birth, was from New York, followed by Pennsylvania with 1,867, Illinois with 1,356 and Ohio with 1,068. From each of four states there was a student enrolment of between 701 and 1,000 and between 501 and 700, from three states 401 to 500, from seven states between 301 and 400, from ten states 201 to 300, from eleven states, 101 to 200, and from six states less than 100.

There were 196 born in the United States territories and possessions studying in forty-six schools in the United States and three in Canada. In addition, 2,577 students of Canadian birth were also studying medicine, 128 of whom were matriculated in forty-four schools in the United States and 2,449 in the ten Canadian medical schools. Fourteen students of Canadian birth were registered at the College of Medical Evangelists,

thirteen at Wayne University College of Medicine and nine at the University of Oregon Medical School. Other schools registered less than seven. Students born in New York were enrolled in all but four states, namely North Dakota, South Dakota, Utah and West Virginia. Students from New York were registered in four of the six provinces of Canada having medical schools. None were studying in Alberta or Saskatchewan. Pennsylvania was represented in all but six states and three provinces.

There were 742 students from New Jersey, which has no medical school, admitted to sixty-two schools, while 292 from the state of Washington were enrolled in fifty-one schools.

Foreign born students were matriculated in sixty-eight of the seventy-seven medical schools in the United States. There were 511 so enrolled, of whom thirty-two each were studying at the College of Medical Evangelists and the University of Illinois College of Medicine, twenty-five at New York University College of Medicine and twenty-four at Harvard Medical School. Other schools registered fewer than sixteen. It may be presumed that many of these are now citizens of the United States.

From the twelve states in which no medical schools are located there were 1,860 students in at least sixty-two schools as follows:

	Enrolled	No. of Schools
Arizona.....	53	32
Delaware.....	36	16
Florida.....	180	39
Idaho.....	102	32
Maine.....	113	31
Montana.....	132	39
Nevada.....	24	17
New Jersey.....	742	62
New Mexico.....	43	27
Rhode Island.....	110	25
Washington.....	292	51
Wyoming.....	33	19
Totals.....	1,860	

The classification of students by birthplace is extended further in table 7 for the medical schools of the United States and Canada. This compilation reveals that 13,585 students are studying in the state of their birth and 10,609 elsewhere. In the schools of Illinois 953 were born in the state and 1,026 elsewhere. More than 900 born outside the state were enrolled in institutions in New York and Pennsylvania but the number of those born within and studying in these states was greater. Schools located in California, Connecticut, the District of Columbia, Kentucky, Louisiana, Maryland, Massachusetts, Missouri and Tennessee enrolled more students born outside the state than from within.

In the United States 11,136 students were attending school in the state of their birth and 10,135, or 44 per cent, elsewhere. Eliminating the 1,860 from states which have no medical school, there are still 8,749 of the total number of students, 24,194, studying outside their birth state. Similar figures for Canada are, respectively, 2,449 and 474.

RESIDENT AND NONRESIDENT STUDENTS

Data regarding students classified as residents or nonresidents are enumerated in table 8. Among state universities, as well as other schools, there is a wide variation in the definition of the term "resident." In some universities this is determined by the legal or permanent residence of the student, parents or guardian

only, while in some schools continuous residence for from six months to one, two or three years just prior to the student's application for enrolment is also required. Others require the student to be a voter; that the parents' home in the state be established prior to

TABLE 8.—Resident and Nonresident Students

	Resident Students	Nonresident Students	Totals
University of Alabama.....	81	22	103
University of Arkansas.....	210	59	278
University of California.....	238	3	241
College of University	91	225	316
Stanford.....	191	11	202
University of Colorado.....	205	35	240
Yale University.....	182	22	204
Georgetown University.....	51	157	208
George Washington University.....	23	303	326
Howard University.....	53	195	248
Emory University.....	10	109	119
University of Georgia.....	137	82	219
Loyola University.....	166	..	166
Northwestern University.....	144	158	302
Rush Medical College.....	292	354	556
University of Chicago School of Medicine.....	44	268	212
University of Illinois.....	109	164	273
Indiana University.....	635	1	636
State University of Iowa.....	447	13	460
University of Kansas.....	287	6	293
University of Louisville.....	275	19	294
Louisiana State University.....	165	176	341
Tulane University of Louisiana.....	243	108	351
Johns Hopkins University.....	113	338	471
University of Maryland.....	64	215	279
Boston University.....	182	188	370
Harvard Medical School.....	133	72	205
Tufts College.....	119	403	522
University of Michigan.....	289	97	386
Wayne University.....	351	115	466
University of Minnesota.....	242	3	245
University of Mississippi.....	411	43	454
University of Missouri.....	41	3	44
St. Louis University.....	75	..	75
Washington University.....	64	354	418
Creighton University.....	128	217	345
University of Nebraska.....	36	195	231
Dartmouth Medical School.....	299	21	320
Albany Medical College.....	7	35	42
Long Island College of Medicine.....	91	37	128
University of Buffalo.....	281	73	354
Columbia University.....	205	54	259
Cornell University.....	198	215	413
New York Medical College.....	157	135	292
New York University.....	188	90	278
University of Rochester.....	380	115	495
Syracuse University.....	109	91	200
University of North Carolina.....	142	28	170
Duke University.....	65	14	79
Wake Forest College.....	40	219	259
University of North Dakota.....	51	9	60
University of Western Res	47	2	49
Ohio State.....	224	79	303
University of Ohio State	199	66	265
University of Hahnemann Medical College.....	307	..	307
Jefferson Medical College.....	224	7	231
Temple University.....	153	87	240
University of Pennsylvania.....	282	261	543
Woman's Medical College.....	302	193	497
University of Pittsburgh.....	268	178	446
Medical College of South Carolina.....	293	198	491
University of South Dakota.....	37	66	103
University of Tennessee.....	255	2	257
Meharry Medical College.....	153	18	171
Vanderbilt University.....	36	14	50
Baylor University.....	233	206	439
University of Texas.....	8	188	196
University of Utah.....	73	127	200
University of Vermont.....	268	37	305
University of Virginia.....	374	..	374
Medical College of Virginia.....	46	10	56
West Virgin.....	104	27	131
University.....	175	79	254
Marquette.....	132	163	295
	45	..	45
	247	15	262
	148	165	313
Totals.....	13,292	7,979	21,271

than six months. In some schools also a student coming into the state for educational purposes only would not be considered a resident. Among medical schools not a part of a state university the term "resident" is defined mostly by the home address of the student or the legal residence of the parents or guardian. In one school a student is considered a resident if he lives in the state.

On the basis of these factors, in the sixty-seven approved medical schools and the ten approved schools of the basic medical sciences in the United States there were 13,292 students reported as residents and 7,979 as nonresidents. The state university enrolling the greatest number of nonresidents was the University of Tennessee College of Medicine, which had 233 residents and 206 nonresidents, while at the Universities of Georgia, Missouri, Ohio State, Texas and West Virginia nonresidents were not registered and only one of the 636 students of the University of Illinois College of Medicine was a nonresident.

Among other than state universities, it is of interest to note the resident and nonresident enrolment. Many of the schools select their students from among residents of the state. This is particularly significant at the Universities of Southern California, Stanford, Tufts, Long Island, Buffalo and Syracuse. The enrolment in municipal medical schools consisted largely of resident students.

TABLE 9.—Resident and Nonresident Students, 1936-1939

	Resident	Nonresident	Totals
1936-1937.....	14,026	8,069	22,095
1937-1938.....	13,518	8,069	21,587
1938-1939.....	13,418	7,884	21,302
1939-1940.....	13,292	7,979	21,271

The figures in tables 7 and 8 giving the number of residents and nonresidents and the preceding one classifying students by birthplace show a divergence. More than 2,000 students born outside the state have been classed as residents. Excluding Canadian registration given in table 7 there were 11,136 attending school in the state of their birth and 10,135 elsewhere, as compared with 13,292 whose legal residence is in the state in which they are pursuing their medical courses and 7,979 classified as nonresidents.

The study of resident students has been carried on for four years. For purposes of comparison the figures for the sessions 1936-1939 inclusive are reproduced in table 9. As will be noted, the figures do not vary to any measurable extent.

The ten faculties of medicine of Canada, including one offering courses in the basic medical sciences, reported 2,120 residents of Canada and 803 nonresidents. The definition of a resident by these schools varied from students whose permanent address is within one of the provinces of Canada, or the specific province in which the school is located, to home address on registration and taxpayers. The greatest number of nonresidents in any one school was reported by McGill University Faculty of Medicine, where 277 of the 444 students enrolled were nonresidents. This school obtains a large portion of its student body from the United States. Dalhousie University Faculty of Medicine registered the second greatest number of nonresidents, seventy-eight of an enrolment of 183. All other schools enrolled fewer than sixty-one with one exception—the University of Toronto Faculty of Medicine, where 195 of an enrolment of 777 were nonresidents.

the beginning of premedical work; the student to be a taxpayer or a dependent of a taxpayer, regardless of whether he resides in the state, or require the student to be self supporting. In some schools each case is determined by an attorney after consideration of birth, citizenship, residence of parents, and so on. The most common method is the determination of residence by ascertaining whether the student, parents or guardian has been a bona fide resident for a period of not less

Comparing the figures for Canada in table 7, as in the United States, reveals somewhat similar figures: 2,449 born in Canada and 474 elsewhere, compared with 2,120 residents and 803 nonresidents.

SCHOOLS, STUDENTS AND GRADUATES BY STATES

Medical schools are located in thirty-six states and the District of Columbia. In table 10 are tabulated the

TABLE 10.—*Schools, Students and Graduates by States**

	Schools	Students	Graduates
Alabama.....	1	103	...
Arkansas.....	1	278	63
California.....	4	999	259
Colorado.....	1	204	51
Connecticut.....	1	208	44
District of Columbia.....	3	693	161
Georgia.....	2	385	83
Illinois.....	5	1,979	574
Indiana.....	1	460	105
Iowa.....	1	293	71
Kansas.....	1	294	69
Kentucky.....	1	341	84
Louisiana.....	2	822	256
Maryland.....	2	649	168
Massachusetts.....	3	1,113	282
Michigan.....	2	711	185
Minnesota.....	1	454	104
Mississippi.....	1	44	...
Missouri.....	3	838	201
Nebraska.....	2	551	133
New Hampshire.....	1	42	...
New York.....	9	2,589	597
North Carolina.....	3	398	58
North Dakota.....	1	49	...
Ohio.....	3	875	201
Oklahoma.....	1	231	52
Oregon.....	1	240	49
Pennsylvania.....	6	2,337	569
South Carolina.....	1	171	40
South Dakota.....	1	50	...
Tennessee.....	3	835	189
Texas.....	2	679	165
Utah.....	1	56	...
Vermont.....	1	131	36
Virginia.....	2	549	128
West Virginia.....	1	45	...
Wisconsin.....	2	575	120
Totals.....	77	21,271	5,097

* Excluding fifth or intern year students.

number of schools, students and graduates by states. Nine schools are located in the state of New York and this state naturally had the greatest number of students and graduates, 2,589 and 597 respectively. Pennsylvania with six schools had 2,337 students and 569 graduates; Illinois with five schools 1,979 students and 574 graduates ranks third, while Massachusetts with three schools, 1,113 students and 282 graduates completes the group of states having an enrolment of more than 1,000, although California had 999 students and 259 graduates.

In the seventy-seven schools, including those that offer courses in the basic medical sciences only, there were 21,271 students and 5,097 graduates. Students intern- ing as a requirement for the degree, or fifth year students, are not included in this tabulation. Neither are part-time, special and graduate students. The greatest number of graduates in any one state was 597 who completed their courses in New York schools. There were 574 from Illinois schools and 569 from schools in Pennsylvania. Five other states had more than 200 graduates—California, Louisiana, Massachusetts, Mis- sissippi and Ohio. Ten states had more than 100 but less than 200 graduates. Seven states had no graduates, as the medical schools located therein do not offer the complete medical course. All others had less than 100.

The status of two medical schools will change in the future:

Undergraduate courses at Rush Medical College will terminate in June 1942, when the students now enrolled

will complete their studies. All undergraduate instruc- tion will thereafter be given on the University of Chi- cago campus and Rush will become a postgraduate school. The college is now designated The Rush Gradu- ate School of Medicine. Graduate courses are being organized. Wilber E. Post, M.D., has been appointed dean of the graduate school.

On Aug. 4, 1939, the Board of Trustees of Wake Forest College accepted the resources of the Bowman Gray Foundation in Winston-Salem and authorized the medical school to be moved to that city and expanded to offer instruction to include the entire four years leading to the M.D. degree. The physical plant is now under construction. The date of the beginning of the clinical years has not been announced.

REQUIRED INTERNSHIPS

The medical schools and licensing boards requiring a hospital internship for the M.D. degree and state licensure, respectively, are shown in tables 11 and 12. Twelve schools in the United States and three in Can- ada require an internship for graduation. Several medical schools accept research or other clinical work in lieu of hospital service. The University of Min- nesota in 1915 was the first school to adopt this basis for its degree. The two medical schools of the Univer- sity of Chicago, i. e. Rush Medical College, which had required the internship for the M.D. degree since 1919, and The School of Medicine since 1930, discontinued this formal requirement in 1936. Louisiana State Uni- versity Medical Center, which since the medical school

TABLE 11.—*Internship Required by Medical Schools*

University of California Medical School
College of Medical Evangelists
University of Southern California School of Medicine
Stanford University School of Medicine
Loyola University School of Medicine
Northwestern University Medical School
University of Illinois College of Medicine
Wayne University College of Medicine
University of Minnesota Medical School
Duke University School of Medicine*
University of Cincinnati College of Medicine
Marquette University School of Medicine
University of Manitoba Faculty of Medicine
Dalhousie University Faculty of Medicine
McGill University Faculty of Medicine†
University of Montreal Faculty of Medicine

* Two year internship required.

† M.D. conferred upon completion of four sessions of thirty-six teach- ing weeks. Not eligible for licensure until completion of internship.

TABLE 12.—*Internship Required by Medical Licensing Boards of All Candidates*

Alabama	Louisiana	Rhode Island
Alaska	Michigan	South Dakota
Arizona	New Hampshire	Utah
Delaware	New Jersey	Vermont
District of Columbia	North Dakota	Washington
Hawaii	Oklahoma	West Virginia
Idaho	Oregon	Wisconsin
Illinois	Pennsylvania	Wyoming
Iowa	Puerto Rico	

Some states require the internship of graduates of medical faculties abroad and reciprocity or endorsement applicants.

was organized in 1931 has offered a five year course including an internship, discontinued the hospital year beginning with the class of 1940. The fifth year was also discontinued by McGill University Faculty of Medicine as a result of the reorganization of its medical curriculum affecting the freshman class of 1936-1937. The M.D. degree is conferred on completion of four sessions of thirty-six teaching weeks but the holders

of these degrees are not eligible to sit for the licensing examination until the completion of a hospital internship. The M.D. degree is likewise conferred by Duke University School of Medicine after completion of the senior year, but all graduates are required to spend at least two years in a hospital or in laboratory work after graduation.

TABLE 13.—Distribution by Sex

	Students		Graduates	
	Men	Women	Men	Women
University of Alabama.....	102	1	...	1
University of Arkansas.....	269	9	62	5
University of California.....	213	28	55	6
College of Medical Evangelists.....	289	27	95	...
University of Southern California.....	199	3	43	2
Stanford University.....	225	15	53	4
University of Colorado.....	194	10	47	3
Yale University.....	193	15	41	...
Georgetown University.....	326	...	80	...
George Washington University.....	229	19	45	2
Howard University.....	105	14	31	...
Emory University.....	219	...	50	...
University of Georgia.....	158	8	30	3
Loyola University.....	287	15	112	3
Northwestern University.....	539	17	151	5
Rush Medical College.....	200	12	100	6
University of Chicago.....	255	18	32	3
University of Illinois.....	588	48	155	7
Indiana University.....	440	20	104	1
State University of Iowa.....	277	16	67	4
University of Kansas.....	282	12	67	2
University of Louisville.....	331	10	81	3
Louisiana State University.....	338	13	127	9
Tulane University of Louisiana.....	454	17	117	3
Johns Hopkins University.....	253	26	60	8
University of Maryland.....	351	19	97	3
Boston University.....	175	30	44	10
Harvard Medical School.....	522	...	132	...
Tufts College.....	364	22	91	5
University of Michigan.....	432	34	115	10
Wayne University.....	234	11	59	1
University of Minnesota.....	423	31	101	3
University of Mississippi.....	42	2	...	...
University of Missouri.....	74	1	...	...
St. Louis University.....	418	...	106	...
Washington University.....	320	25	83	7
Creighton University.....	217	14	51	6
.....	300	11	72	4
.....	42	...	...	...
.....	123	5	27	2
.....	334	20	77	4
University of Buffalo.....	243	16	56	...
Columb.....	387	26	91	11
Cornell.....	267	25	62	8
New Y.....	259	19	48	2
New Y.....	437	38	111	13
Univ.....	189	11	42	3
Syrac.....	156	14	38	2
Univ.....	70	9	...	...
Duke.....	250	9	57	1
Wak.....	57	3	...	...
Univ.....	49	...	...	...
Univ.....	285	18	62	4
Wes.....	254	11	54	4
Obic.....	293	14	74	3
University of Oklahoma.....	219	12	50	2
University of Oregon.....	222	11	45	4
Hahnemann Medical College.....	548	...	127	...
Jefferson Medical College.....	497	...	125	...
Temple University.....	415	31	114	5
University of Pennsylvania.....	467	24	129	5
Woman's Medical College.....	...	103	...	18
University of Pittsburgh.....	249	8	44	2
Medical College of South Carolina.....	164	7	26	4
University of South Dakota.....	49	1	...	...
University of Tennessee.....	423	16	93	3
Meharr.....	190	6	39	...
Vanderl.....	194	6	52	2
Baylor.....	294	11	74	1
University of Texas.....	347	27	83	7
University of Utah.....	53	1	...	...
University of Vermont.....	126	5	34	2
University of Virginia.....	249	5	62	...
Medical College of Virginia.....	267	28	53	8
West Virgh.....	45	...	...	...
University.....	243	19	47	1
Marquette.....	300	13	72	...
University.....	216	17	52	3
.....	201	17	43	2
.....	181	2	35	...
.....	278	...	62	...
University of Western Ontario.....	205	15	31	...
University of Toronto.....	724	53	129	9
McGill University.....	418	26	153	6
University of Western.....	193	7	48	...
U.....	311	3	51	...
U.....	42	6	...	...
Total.....	22,903	1,291	5,430	273

The medical licensing boards of twenty-two states, the District of Columbia, Alaska, Hawaii and Puerto Rico require that all candidates for licensure possess a hospital internship. The first state to adopt this requirement was Pennsylvania in 1914. In addition, other states exact the internship of graduates of faculties of medicine abroad and of applicants for reciprocity or endorsement.

Some of the medical schools and licensing boards have their own list of hospitals acceptable for intern training but the Council's approved list is generally in use. A revised edition will be found beginning on page 752.

There were 1,152 students in the United States and 132 in Canada reported as completing the fifth or intern year requirement of the medical schools which exact the fulfilment of the internship as requisite for the M.D. degree. In addition, statistics computed indicate that 98 per cent of the graduates of recent years have obtained or are obtaining this added experience.

DISTRIBUTION BY SEX

Students and graduates in the United States and Canada classified according to sex are shown in table 13. Seventy-six schools had both men and women students, of which fifty-nine had women graduates. Of

TABLE 14.—Distribution by Sex in the United States and Canada, 1936-1939

Year	Students		Graduates	
	Male	Female	Male	Female
1935-1936.....	24,219	1,254	5,388	268
1936-1937.....	23,787	1,244	5,624	261
1937-1938.....	23,234	1,307	5,430	252
1938-1939.....	22,919	1,293	5,290	285
1939-1940.....	22,903	1,291	5,430	273

this total, nine Canadian faculties had students of both sexes and four had women graduates as well as men. Women were enrolled in seven of the ten schools in the United States offering courses of the basic medical sciences and also in the one such school located in Canada. Altogether there were 22,903 men and 1,291 women students and 5,430 men and 273 women graduates. Of these, 20,126 male students and 4,844 graduates were in schools in the United States and 2,777 and 586 respectively in Canada. Likewise there were 1,145 female students and 253 graduates in the United States and 146 students and twenty graduates in Canada. Of the male students and graduates, 2,661 and 892 respectively were enrolled in schools in the United States which are not coeducational and 278 and 227 in Canada.

An average of seventeen women students were enrolled in the sixty-seven coeducational institutions in the United States and three graduates from fifty-five schools.

Figures are given in table 14 showing this distribution for a five year period.

WOMEN IN MEDICINE

Elizabeth Blackwell was graduated in 1849 from the Geneva Medical College of Syracuse, N. Y., now known as Syracuse University College of Medicine, and was the first woman to receive the degree of M.D. in the United States. The first medical school for women was organized in 1850 with a class of seven, the Woman's Medical College of Pennsylvania, and is still

in existence. It is said to be the only medical school for women in the world and to have graduated more than 1,800, including 135 who have become medical missionaries in foreign countries.

During 1939-1940, as shown in table 15, there were 1,145 women studying medicine in the United States,

TABLE 15.—*Women in Medicine in the United States*

Year	Women Students	Percentage of All Students	Women Graduates	Percentage of All Graduates
1905.....	1,073	4.1	219	4.0
1910.....	907	4.0	116	2.6
1915.....	592	4.0	92	2.6
1920.....	818	5.8	122	4.0
1925.....	910	5.0	204	5.1
1926.....	935	5.0	212	5.4
1927.....	964	4.9	189	4.7
1928.....	929	4.5	207	4.9
1929.....	925	4.4	214	4.8
1930.....	955	4.4	204	4.5
1931.....	900	4.5	217	4.6
1932.....	935	4.3	208	4.2
1933.....	1,056	4.7	214	4.4
1934.....	1,020	4.5	211	4.2
1935.....	1,077	4.7	207	4.1
1936.....	1,133	5.0	246	4.7
1937.....	1,113	5.1	238	4.4
1938.....	1,161	5.4	237	4.6
1939.....	1,144	5.4	260	5.1
1940.....	1,145	5.4	253	5.0

constituting 5.4 per cent of the student enrollment. There were 253 graduates, seven less than in 1939. Of the women matriculants, 103 were in attendance at the one medical college for women while 1,042 were matriculated in sixty-seven schools admitting women. Eighteen were graduated from the Woman's Medical College of Pennsylvania, while 235 secured their degrees from coeducational schools. In the sixteen years since 1925, 3,521 women have graduated in medicine. The decrease in the number of medical students from 1914 to 1918 affected men and women about equally. From 1920 to 1940 the number of women medical students has remained approximately the same. The Council's list of hospitals approved for internships include many that accept women. Statistics compiled by the American Medical Directory revealed that there were 7,470 women physicians in the United States.

Women are admitted to all medical schools of the United States except:

- Georgetown University School of Medicine.
- Emory University School of Medicine.
- Harvard Medical School.
- St. Louis University School of Medicine.
- Dartmouth Medical School.
- Hahnemann Medical College and Hospital of Philadelphia.
- Jefferson Medical College.

In addition, two schools which are not coeducational had no women students enrolled, namely the University of North Dakota School of Medicine and West Virginia University School of Medicine.

PART TIME, SPECIAL AND GRADUATE STUDENTS

In forty-seven medical schools of the United States and six in Canada there were, in addition to the regularly enrolled students, 942 part time, special and graduate students pursuing medical subjects, which are tabulated in table 16. This group composes 108 part time, 228 special and 606 graduate students.

The students studying part time were enrolled in twenty-three schools in the United States and one in Canada. The largest group enrolled in any one school

were nineteen studying at the University of Buffalo. Twelve were registered at the University of Kansas and eleven at Wayne University. Less than five were enrolled in fifteen schools.

The 228 special students matriculated in twenty-four schools in the United States and two in Canada. The greatest number (fifty) were at the University of Kansas; at The School of Medicine of the University of Chicago forty-four were in attendance, at the University of North Carolina twenty-three, the University of Tennessee twenty-two, and at Johns Hopkins University seventeen. All other schools registered fewer than eight.

Students registered in the graduate school were pursuing medical subjects in twenty-one medical schools of the United States and four in Canada. There were 606 so registered. At Northwestern University Medical School there were 140 such students. The next highest enrolment was seventy at the University of Toronto Faculty of Medicine, and at Columbia Uni-

TABLE 16.—*Part Time, Special and Graduate Students in Medical Schools, 1939-1940*

	Part Time	Special	Graduate
University of Arkansas.....	2	4	..
University of Southern California.....	..	7	15
George Washington University.....	..	..	1
Howard University.....	5	..	..
Emory University.....	2	..	..
University of Georgia.....	2	..	..
Northwestern University.....	..	..	140
Rush Medical College.....	..	1	..
University of Chicago, The School of Medicine.....	..	44	..
Indiana University.....	..	7	1
State University of Iowa.....	1	..	11
University of Kansas.....	12	50	..
University of Louisville.....	..	..	1
Louisiana State University.....	2	..	..
Tulane University of Louisiana.....	5	..	..
Johns Hopkins University.....	4	17	..
University of Maryland.....	..	1	..
Boston University.....	..	2	9
University of Michigan.....	7	..	3
Wayne University.....	11	..	47
University of Minnesota.....	..	3	..
University of Mississippi.....	6	1	42
St. Louis University.....	..	..	..
Washington University.....	2	..	..
Creighton University.....	..	4	6
University of Nebraska.....	..	..	..
Albany Medical College.....	..	2	59
Columbia University.....	..	..	16
Cornell University.....	..	8	13
New York Medical College.....	..	..	..
New York University.....	5	7	..
University of Buffalo.....	19	6	..
University of North Carolina.....	4	23	..
University of North Dakota.....	2	..	..
University of Cincinnati.....	..	3	..
University of Oklahoma.....	1	3	7
University of Oregon.....	..	5	18
Temple University.....	..	..	22
University of Pittsburgh.....	8	..	..
Meharry Medical College.....	1	1	11
University of Tennessee.....	..	22	4
Vanderbilt University.....	2	2	6
University of Texas.....	..	1	..
University of Utah.....	2	..	..
Marquette University.....	2	..	49
University of Wisconsin.....	..	..	6
McGill University.....	1	..	2
Queen's University.....	..	..	..
University of Manitoba.....	..	1	49
University of Montreal.....	..	..	70
University of Toronto.....	..	3	..
University of Western Ontario.....	..	..	..
Totals.....	108	228	606

versity College of Physicians and Surgeons it was fifty-nine, while other schools had less than fifty.

The University of Oklahoma School of Medicine was the only school which matriculated these three types of students.

Among Canadian schools, one part time, four special and 126 graduate students were enrolled.

SCHOOLS, STUDENTS AND GRADATES, 1905-1940

The number of medical schools, students and graduates in the United States for five year intervals from 1905 to 1920 and for each year since is shown in table 17. In 1905 in the 160 schools then existing there were 26,147. For the academic year just ended there were 21,271 students in seventy-seven schools. This tabulation includes data for only those taking medical courses leading to the M.D. degree and does not include part time and special students, though their work may later be accepted for the M.D. degree. Omitted from these figures also are graduate students.

In the ten years 1910 to 1920 there was a decrease in the enrolment of more than 7,000, while from 1921 to 1935 there was a continuous increase and since 1935 there has been a gradual decrease. In 1940 there were thirty-one fewer enrolled than in 1939 and 1,617 than 1935, 1,293 fewer than 1936, 824 in 1937 and 316 in 1938. The number of medical graduates, however, may not be decreased, since more careful selection will doubtless diminish the number of students who fail to complete their course because of poor scholarship.

TABLE 17.—*Schools, Students and Graduates in the United States, 1905-1940*

	Schools	Students *	Graduates
1905.....	160	26,147	5,006
1910.....	131	21,526	4,440
1915.....	96	14,891	3,536
1920.....	85	13,798	3,047
1921.....	83	14,469	3,186
1922.....	81	15,635	2,520
1923.....	80	16,960	3,120
1924.....	79	17,728	3,562
1925.....	80	18,200	3,974
1926.....	79	18,840	3,962
1927.....	80	19,662	4,035
1928.....	80	20,545	4,262
1929.....	76	20,878	4,446
1930.....	76	21,597	4,565
1931.....	76	21,982	4,735
1932.....	76	22,135	4,936
1933.....	77	22,466	4,805
1934.....	77	22,709	5,035
1935.....	77	22,883	6,101
1936.....	77	22,364	5,183
1937.....	77	22,095	5,377
1938.....	77	21,587	5,104
1939.....	77	21,302	5,089
1940.....	77	21,271	5,097

* Includes figures for schools of the basic medical sciences.

The number of graduates in 1940 was 5,097, eight more than in 1939, ninety-seven fewer than 1938, 280 less than in 1937. There were 509 fewer graduates in 1939 from sixty-seven schools granting the M.D. degree than in 1905, when there were 160 schools. With the exception of 1933, 1938 and 1939, there has been an increase in the number of medical graduates each year since 1925.

Not shown in the table this year are figures for the year when the lowest number of M.D. degrees was granted. In that year (1922) there were only 2,520 graduates, because of the small size of the class that entered as freshmen in 1918.

The number of medical schools in 1905 was 160; by 1910 the number had dropped to 131 and since 1915 there have been fewer than 100. Since 1933 there have been sixty-six approved four year schools, one offering only clinical courses and ten schools of the basic medical sciences.

In the seventy-seven medical schools in the United States, including the schools of the basic medical sciences, there were 21,271 students and 5,097 gradu-

GRADUATES WITH BACCALAUREATE DEGREES

From the figures contained in table 18 it can be noted that 3,844 of the 5,703 graduates of medical schools in the United States and Canada since July 1, 1939, also held baccalaureate degrees while only five schools require a degree for admission. All the graduates of eleven schools—Stanford, Chicago, Johns Hopkins,

TABLE 18.—*Graduates with Baccalaureate Degrees*

	Graduates Degrees
University of Arkansas.....	63
University of	69
College of Med	101
University of Southern California.....	43
Stanford University	55
University of Colorado.....	51
Yale University	44
Georgetown University	80
George Washington University.....	48
Howard University	33
Emory University	50
University of Georgia.....	33
Loyola University	115
Northwestern University	156
Rush Medical College.....	106
University of Chicago, School of Medicine.....	35
University of Illinois.....	162
Indiana University	105
State University of Iowa.....	71
University of Kansas.....	69
University of Louisville.....	84
Louisiana State University.....	136
Tulane University of Louisiana.....	120
Johns Hopkins University.....	68
University of Maryland.....	100
Boston University	54
Harvard University	132
Tufts College	96
University of Michigan.....	125
Wayne University	60
University	104
St. Louis	106
.....	95
.....	57
.....	76
.....	29
.....	81
.....	56
Columbia University	102
Cornell University	70
New York Medical College.....	50
New York	124
University	45
Syracuse	40
Duke University	58
University of	66
Western Re	58
Ohio State	77
University of	52
University of Oregon.....	49
Hahnemann Medical College.....	127
Jefferson Medical College.....	125
Temple University	119
University of Pennsylvania.....	134
Woman's Medical College	18
University of Pittsburgh.....	46
Medical College of South Carolina.....	40
University of Tennessee.....	96
McHarr Medical College.....	39
Vanderbilt University	54
Baylor University	75
University of Texas.....	90
University of Vermont.....	36
University of Virginia.....	62
Medical College of Virginia.....	66
University of Wisconsin.....	48
Marquette University	72
University of Alberta.....	35
University of Manitoba.....	45
Dalhousie University	35
Queen's University	62
University of Western Ontario.....	51
.....	158
.....	161
.....	48
.....	51
Totals.....	5,703

Tufts, Wayne, Cornell, New York University, Western Reserve, Oregon, Jefferson and Woman's—held baccalaureate degrees. Six of these schools either require a degree for admission or will enroll students with three years of college training if the baccalaureate degree is conferred in absentia at the end of the first year in medicine. Four schools in the United States and two in Canada which have a degree requirement accepted altogether twenty-three students with less than the

stated college education. Every medical school had graduates with a baccalaureate degree. The school in the United States having the fewest was the University of Arkansas School of Medicine. Of a class of sixty-three, fourteen had degrees. Queen's University Faculty of Medicine had the fewest of any school in Canada. Only two of the sixty-two graduates were in possession of a college degree. A percentage of 67.4 of all graduates held such degrees.

B.S. IN MEDICINE DEGREE

The graduates of thirty schools in the United States and two in Canada received the Bachelor of Science in Medicine degree. There were 688 awarded in the United States and fifty-eight in Canada. The University of Illinois graduates comprising 110 were the largest single group to obtain this degree. Of the two schools in Canada, one issued fifty-one diplomas. Altogether, a total of 746 Bachelor of Science in Medicine degrees were awarded to 5,703 graduates. However, many schools have discontinued this practice while others have never issued any such degrees.

STUDENTS BY CLASSES, 1930-1939

In table 19 is presented the number of students enrolled in preclinical and clinical classes in the medical schools of the United States by years for each session from 1930-1931 to 1939-1940 inclusive. The total

TABLE 19.—Students in the United States by Years 1930-1940

	Preclinical		Clinical		Intern Year	Total
1930-1931.....	6,456	5,538	5,080	4,908	1,025	23,007
1931-1932.....	6,260	5,462	4,932	4,885	1,067	23,202
1932-1933.....	6,426	5,479	5,017	4,948	1,106	23,572
1933-1934.....	6,457	5,571	4,988	4,937	1,183	23,982
1934-1935.....	6,356	5,024	5,142	4,905	1,233	24,121
1935-1936.....	6,005	5,458	5,230	5,020	1,213	23,777
1936-1937.....	5,910	5,269	5,140	5,158	1,255	23,550
1937-1938.....	5,791	5,225	4,936	5,036	1,182	22,719
1938-1939.....	5,754	5,160	4,947	4,921	1,152	22,454
1939-1940.....	5,794*	5,177*	4,921*	4,894*	1,152	22,423

* Excluding enrolment figures for the two medical schools of the University of Chicago, i. e., Rush Medical College 212 and The School of Medicine 273, a total of 485.

attendance for the first preclinical year for the last session was 5,794, forty more than the number enrolled in 1938-1939. Since the year 1933-1934, however, when 6,457 were matriculated, there has been a reduction in this class of 663. In the second preclinical year 5,177 were in attendance in 1939-1940 and, for the two clinical years, 4,921 and 4,894. The two medical schools of the University of Chicago are not operated under the promotion by class system, making it impossible for the schools to report their students in this manner and accordingly they are not included in the figures by classes, but their enrolment is included in the total. Estimates, however, were used in computing totals in 1931, 1934, 1935 and 1938. In 1936, figures for Duke University were also excluded by classes. At Rush Medical College and The School of Medicine of the University of Chicago there were 485 students enrolled during the session just closed, 212 and 273 respectively. By comparison it is noted that the freshman class increased forty, the sophomore enrolment seventeen, the junior and the senior class decreased twenty-six and twenty-seven, respectively, while the number of those interning as a requirement for the M.D. degree remained the same. There was a reduction of thirty-one in the total enrolment of all classes including the intern year.

STUDENTS LEAVING SCHOOL DURING FIRST TWO YEARS

Of the 6,005 students selected for the freshman class for the session 1935-1936 it is interesting to note that 736 failed or for other reasons did not undertake sophomore studies and further that 1,019 had dropped out by the end of the second medical year. A compari-

TABLE 20.—Students Leaving School During First Two Years

	Class Entering 1935	Class Entering 1937
Freshmen enrolment.....	6,005	5,791
Junior enrolment.....	4,986	4,921
Loss during first two years...	1,019 —870	870
149 fewer students lost during first two years by the class entering in 1937		

son of the figures for 1935-1936 with those of 1937-1938 is made (table 20), as those entering in the former year would be completing their preclinical course by the latter year.

While 214 fewer freshmen were enrolled in 1937-1938 than in 1935-1936, there were also 149 fewer students who had discontinued their course by the end of the second year. From these figures it is clear that a decrease in the size of the entering class does not mean a corresponding reduction of the number of students in the clinical years. Further, the failure of 17 per cent of the students to continue beyond the second year suggests that many of those who were admitted lacked the ability to meet the exacting requirements of the medical curriculum. Decreases in the entering classes since 1935-1936 may indicate a more careful selection of students, which will result in a smaller number dropping out before the beginning of the junior class and a larger percentage of the class pursuing their course to graduation.

FEES

In table 21 the eighty-seven medical schools of the United States and Canada, including those offering courses in the basic medical sciences, have been grouped according to the tuition fees charged. To arrive at the figures listed, an average was computed of the resident fees for each school. Two schools have fees under \$100. These were the Universities of North Dakota and Texas. Sixteen schools had fees over \$500, namely the College of Medical Evangelists, Yale, George Wash-

TABLE 21.—Fees, 1939-1940

	Schools
Under \$99.....	2
\$100 to 199.....	7
200 to 299.....	23
300 to 399.....	14
400 to 499.....	25
500 or over.....	16
Total.....	87

Based on fees charged resident students.

ington. Johns Hopkins. Tufts. St. Louis. Columbia. Cornell. Long Island. New York Medical. New York University. Syracuse. Buffalo. Hahnemann. Pennsylvania and Pittsburgh. Thirty-one schools in the United States and five in Canada made an additional charge for nonresidents ranging from \$37.50 each year by the University of Illinois College of Medicine to \$400 exacted by Louisiana State University. Medical

school fees have been increased, as can be noted by a comparison with a similar tabulation. In 1939 there were three schools in the first group, eight in the second, twenty-two in the third, sixteen in the fourth, twenty-three in the fifth and fifteen in the sixth group.

The lowest nonresident fee in the United States was \$37.50, and in Canada one school has a nonresident fee of \$5 for the first year and \$10 for the second, third and fourth years. Nine schools in the United States and Canada have a nonresident fee of \$99 or less, eighteen have fees between \$100 and \$199, six from \$200 to \$299, two between \$300 and \$399, and one has a fee of \$400.

The average resident fee charged in medical schools in the United States was \$378, whereas in 1939 it was computed at \$353 and in 1938 as \$342.

CITIZENS OF THE UNITED STATES IN FACULTIES OF MEDICINE ABROAD

An inquiry into the number of citizens of the United States studying medicine in faculties of medicine abroad has been carried on by the Council on Medical Education and Hospitals since 1931, when it became evident that great numbers were going to Europe to pursue medical courses. In the spring of 1939, according to incomplete official reports, there were at least 500 at that time in Europe, studying principally in the extramural medical schools of Scotland. Completion of the professional education of these students was interrupted by the decision of the State Department to

discontinue visas of passports to combat areas. Many of these applied to American schools for either advanced credit or admission to the entering class of 1939-1940, with little success. The medical schools of the United States already have many more applications for admission than they can possibly admit and at the time these students were seeking entrance their classes had already been filled to capacity. Some 390 students of the Scottish schools formed an association known as the American Medical Clubs of Scotland and appealed to professional educational agencies for assistance in placing these students. About fifty of the students in their fourth or fifth year were allowed to return to Scotland, leaving approximately 340 students unable to continue their education. The matter was considered at a meeting of the Council on Medical Education and Hospitals held Dec. 10, 1939, and it was felt that the question of accepting transfers from these institutions is a matter which should be left to the consideration of the individual medical schools of this country. Similar action was taken by other bodies. At a conference in March 1940 the State Department agreed that for the present at least it would issue visas for Switzerland for the students who wish to continue their studies in that country. It was estimated that about 100 of the group will avail themselves of this possibility. With the movement of events in Europe in recent months it is quite evident that it will be impossible for students from this country to obtain a medical education in Europe in the near future.

DESCRIPTION OF MEDICAL SCHOOLS

ARKANSAS

Little Rock

UNIVERSITY OF ARKANSAS SCHOOL OF MEDICINE, 1209 McAlmont Street.—Organized in 1879 as the Medical Department of Arkansas Industrial University. Present title in 1899. In 1911 the College of Physicians and Surgeons united with it and it became an integral part of the University of Arkansas. The first class was graduated in 1880. Clinical teaching was suspended in 1918 but resumed in 1923. Coeducational since organization. The faculty consists of 29 professors and 102 lecturers and assistants, total 131. The curriculum covers four years of nine months each. Entrance requirements are two years of collegiate work. The B.S. degree in medicine is conferred at the end of the second year. The fees for the four years for residents of Arkansas are \$280; nonresidents are charged \$225 additional each year. The registration for 1939-1940 was 278; graduates, 63. The next session begins Sept. 25, 1940, and ends June 10, 1941. The Dean is Stuart P. Cromer, M.D.

CALIFORNIA

Berkeley-San Francisco

UNIVERSITY OF CALIFORNIA MEDICAL SCHOOL, University Campus, Berkeley; Medical Center, San Francisco.—Organized in 1864 as the Toland Medical College. The first class graduated in 1864. In 1873 it became the Medical Department of the University of California. In 1909, by legislative enactment, the College of Medicine of the University of Southern California, at Los Angeles, became a clinical department but was changed to a graduate school in 1914. In 1915 the Hahnemann Medical College of the Pacific was merged, and elective chairs in homeopathic materia medica, and therapeutics were provided. Coeducational since organization. Three years of collegiate work are required for admission. The work of the first year is given at Berkeley and that of the last three years at San Francisco. The faculty is composed of 154 professors and 302 associates and assistants, a total of 456. The course covers four years of eight months each, and an additional fifth year consisting of an internship in a hospital or of special work in a department of the medical school. Fees for the four years, respectively, for residents of California are \$277, \$240, \$235 and \$235; nonresidents are charged \$300 additional each year. The registration for 1939-1940 was 241; graduates, 60. The next session begins Aug. 26, 1940, and ends May 24, 1941. The Acting Dean is President Robert G. Sproul, LL.D., Berkeley.

Loma Linda-Los Angeles

COLLEGE OF MEDICAL EVANGELISTS, Loma Linda; Boyle and Michigan Aves., Los Angeles.—Organized in 1909. The first class graduated in

1914. The laboratory departments are at Loma Linda, the clinical departments at Los Angeles. Coeducational since organization. The faculty is composed of 49 professors and 337 associates, assistants and instructors, a total of 386. The course covers a period of four years of nine months each and an additional year consisting of an internship in an approved hospital. Sixty-four semester hours of collegiate work are required for admission. The total fees are respectively, \$612, \$601, \$611 and \$611. The registration for 1939-1940 was 316; graduates, 101. The next session begins Sept. 2, 1940, and ends June 1, 1941. The President is Percy T. Magan, M.D., Los Angeles. The Dean is E. H. Risley, M.D., Loma Linda; the Associate Dean is W. E. Macpherson, M.D., Los Angeles.

Los Angeles

UNIVERSITY OF SOUTHERN CALIFORNIA SCHOOL OF MEDICINE, 3551 University Avenue.—Organized in 1885 as the University of Southern California College of Medicine. First class graduated in 1888. In 1908, it became the Los Angeles Medical Department of the University of California. In 1909 the College of Physicians and Surgeons, established in 1904, became the Medical Department of the University of Southern California. Its activities were suspended in 1920; reorganized in May 1928, under present title. The faculty consists of 144 professors and 180 instructors, assistants and others, a total of 324. An internship is required for graduation. Three years of collegiate work are required for admission. Coeducational since organization. Annual fees amount to \$452. The registration for 1939-1940 was 202; graduates, 43. The next session begins Sept. 16, 1940, and ends June 7, 1941. The Dean is Paul S. McKibben, Ph.D.

Stanford University-San Francisco

STANFORD UNIVERSITY SCHOOL OF MEDICINE, University Campus, Stanford University; 2398 Sacramento Street, San Francisco. The main buildings are in San Francisco. The laboratories of anatomy, bacteriology and experimental pathology, chemistry, and physiology are located on the campus at Stanford University, which is thirty miles southeast of San Francisco adjoining the City of Palo Alto. The post office is Stanford University. Organized in 1908, when by agreement the interests of Cooper Medical College were taken over. The first class graduated in 1913. Coeducational since organization. The faculty consists of 132 professors and 144 lecturers, assistants and others, a total of 276. Three years of collegiate work are required for admission. The course covers four years of eight and one-half months each, plus a fifth year of intern work. The fees for the four years, respectively, are \$530, \$458, \$409 and \$409. The registration for 1939-1940 was 240; graduates, 55. The next session begins Sept. 24, 1940, and ends June 15, 1941. The Dean is Loren Roscoe Chandler, M.D.

COLORADO

Denver

UNIVERSITY OF COLORADO SCHOOL OF MEDICINE, 4200 East Ninth Avenue.—Organized in 1883. Classes were graduated in 1885 and in all subsequent years except 1898 and 1899. Denver and Gross College of Medicine was merged, Jan. 1, 1911. Coeducational since organization. The faculty is composed of 57 professors and 130 lecturers, instructors and assistants, a total of 187. The course covers four years of nine months each. The entrance requirements are three years of collegiate work. The fees for residents of Colorado are, respectively, \$301, \$296, \$281 and \$281. Nonresidents are charged \$245 additional each year. The registration for 1939-1940 was 204; graduates, 51. The next session begins Sept. 23, 1940, and ends June 9, 1941. The Dean is Maurice H. Rees, M.D.

CONNECTICUT

New Haven

YALE UNIVERSITY SCHOOL OF MEDICINE, 333 Cedar Street.—Chartered in 1810 as the Medical Institution of Yale College. Organized in 1812; instruction began in 1813; first class graduated in 1814. A new charter in 1879 changed the name to the Medical Department of Yale College. In 1884, the Connecticut Medical Society surrendered such authority as had been granted by the first charter. In 1887, Yale College became Yale University. Coeducational since 1916. The faculty consists of 178 professors and 220 lecturers and assistants, a total of 398. The requirements for admission are three years of collegiate work. The course covers four years of nine months each. The fees are, respectively, \$505, \$500, \$500, and \$520. The registration for 1939-1940 was 208, graduates, 44. The next session begins Sept. 23, 1940, and ends June 11, 1941. The Acting Dean is Francis G. Blake, M.D.

DISTRICT OF COLUMBIA

Washington

GEORGETOWN UNIVERSITY SCHOOL OF MEDICINE, 3900 Reservoir Road, N.W.—Organized in 1851. First class graduated in 1852. The faculty is composed of 64 professors, 42 associate professors, 12 assistant professors, 5 adjunct professors, and 121 instructors, total 244. A baccalaureate degree is required for admission. The course of study covers four terms of eight and one-half months each. The present fees for each of the four sessions are \$500. The registration for 1939-1940 was 326; graduates, 80. The next session begins Sept. 23, 1940, and ends June 1, 1941. The Dean is David V. McCauley, S.J., Ph.D.

GEORGE WASHINGTON UNIVERSITY SCHOOL OF MEDICINE, 1335 H Street, N.W.—Organized in 1825 as the Medical Department of Columbian College. Also authorized to use the name National Medical College. Classes were graduated in 1826 and in all subsequent years except in 1834 to 1838, and 1861 to 1863, inclusive. The original title was changed to Medical Department of Columbian University in 1873. In 1903 it absorbed the National University Medical Department. In 1904, by an Act of Congress, the title of George Washington University was granted to the institution. Coeducational since 1884. The faculty is composed of 74 professors and 137 instructors, demonstrators and assistants, a total of 211. Two years of collegiate work are required for admission. The course covers four years of thirty-six weeks each. The fees for each of the four years are \$550. The registration for 1939-1940 was 248; graduate, 48. The next session begins Sept. 23, 1940, and ends June 11, 1941. The Dean is Walter A. Bloedorn, M.D.

HOWARD UNIVERSITY COLLEGE OF MEDICINE, Fifth and W Streets, N.W.—Chartered in 1867. Organized in 1869. The first class graduated in 1871. Coeducational since organization. Negro students compose a majority of those in attendance. The faculty comprises 30 professors and 67 instructors and assistants, 97 in all. The admission requirements are at least two years of collegiate work. The course covers four years of thirty-three weeks each. The fees are, respectively, \$269, \$269, \$259 and \$266. Registration for 1939-1940 was 119; graduates, 33. The next session begins Sept. 23, 1940, and ends June 13, 1941. The Dean is Numa P. G. Adams, M.D.

GEORGIA

Atlanta

EMORY UNIVERSITY SCHOOL OF MEDICINE, 50 Armstrong Street.—Organized in 1854 as the Atlanta Medical College. Classes graduated 1855 to 1861, when it suspended. Reorganized in 1865. A class graduated in 1865 and each subsequent year except 1874. In 1898 it merged with the Southern Medical College (organized in 1878), taking the name of Atlanta College of Physicians and Surgeons. In 1913 it merged with the Atlanta School of Medicine (organized in 1905), reassuming the name of Atlanta Medical College. Became the Medical Department of Emory University in 1915; assumed present title in 1917. Three years of collegiate work are required for admission. The faculty consists of 16 professors and 176 associates and assistants, a total of 192. The course of study is four years of thirty-two weeks each. The fees for each of the four years are \$338. The registration for 1939-1940 was 219; graduates, 50. The next session begins Sept. 26, 1940, and ends June 9, 1941. The Dean is Russell H. Oppenheimer, M.D.

Augusta

UNIVERSITY OF GEORGIA SCHOOL OF MEDICINE, University Place.—Organized in 1828 as the Medical Academy of Georgia, the name being changed to the Medical College of Georgia in 1829. Since 1873 it has

been known as the Medical Department of the University of Georgia, the name being changed July 1, 1933, to the University of Georgia School of Medicine. Property transferred to the University in 1911. Classes were graduated in 1833 and all subsequent years except 1862 and 1863. Coeducation was begun in 1920. The faculty includes 60 professors and 29 assistants, 89 in all. Three years of collegiate work are required for admission. The course is four years of thirty-four weeks each. The fees for each of the four years are \$225 for residents of Georgia, and \$445 each year for nonresidents. The registration for 1939-1940 was 166; graduates, 33. The next session begins Sept. 26, 1940, and ends June 9, 1941. The Dean is G. Lombard Kelly, M.D.

ILLINOIS

Chicago

LOYOLA UNIVERSITY SCHOOL OF MEDICINE, 706 South Wolcott Avenue.—Incorporated in 1915 as the Bennett Medical College, and operated as an organic part of Loyola University, by virtue of an agreement entered into with the trustees of Bennett Medical College. Present title assumed in 1917. The Chicago College of Medicine and Surgery was purchased in 1917. The first class graduated in 1916. Coeducational. Three years of collegiate work are required for admission. The course of study is five years, including an internship. The faculty is composed of 88 in professorial rank and 209 others, a total of 297. The fees for each year are \$510, \$515, \$455 and \$372 respectively. The enrolment for 1939-1940 was 302; graduates, 115. Next session for seniors begins Oct. 21, 1940, for juniors Sept. 23, 1940, for freshmen and sophomores, Sept. 16, 1940, and ends June 11, 1941. The Dean is Louis D. Moorhead, M.D.

NORTHWESTERN UNIVERSITY MEDICAL SCHOOL, 303 East Chicago Avenue.—Organized in 1859 as the Medical Department of Lind University. First class graduated in 1860. In 1864 it became independent as the Chicago Medical College. It united with Northwestern University in 1869 but retained the name of Chicago Medical College until 1891, when the present title was taken. Became an integral part of Northwestern University in 1905. Coeducational since 1926. The faculty comprises 136 professors, 356 associates and instructors, a total of 492. The requirement for admission is three years of collegiate work. The B.S. degree in medicine may be conferred before the end of the senior year. The course covers four years of eight and one-half months each and a fifth year spent in an approved hospital as an intern or in other practical work. The total fees are \$414 each year. The registration for 1939-1940 was 556; graduates, 156. The next session begins Oct. 1, 1940, and ends June 14, 1941. The Dean is Irving S. Cutter, M.D.

UNIVERSITY OF CHICAGO, THE SCHOOL OF MEDICINE, Fifty-Eighth Street and Ellis Avenue, Chicago.—Organized in 1924, as a part of the Ogden Graduate School of Science of the University of Chicago. In 1932, when the University of Chicago reorganized its departments, the medical departments were included in the Biological Sciences Division and the school is now officially the School of Medicine of the Division of Biological Sciences of the Ogden Graduate School of Science. It is designated in publications as the School of Medicine of the University of Chicago. The work of the first two years in the medical courses has been given on the University Quadrangles since 1899; but the last two years were offered only at Rush Medical College which was affiliated with the university until 1927 when actual work in the clinical departments on the campus began. After that time, candidates for the degree of Doctor of Medicine could take the work of the first two years on the campus and the work of the third and fourth years either on the campus or at the Rush Medical College. Undergraduate courses in the clinical years at Rush Medical College will terminate in June 1942, when the students now enrolled will complete their studies. All undergraduate instruction will thereafter be given only on the campus, and Rush will become a post-graduate school. The faculty of the School of Medicine is composed of 108 professors, 163 associates, instructors and others, a total of 271. The requirements for admission are three years of collegiate work. The B.S. degree in medicine may be obtained during the second year. The curriculum covers twelve quarters of work. Students are admitted at the beginning of Spring, Summer and Autumn quarters. Sixty-five students are admitted to first year classes in each calendar year. The tuition fee for each of the four years is \$450. The registration for 1939-1940 was 273; graduates, 35. The next session begins Sept. 30, 1940, and ends June 11, 1941. All correspondence relating to general policies should be addressed to W. H. Taliaferro, Ph.D., Dean of the Division of Biological Sciences, or to A. C. Bachmeyer, M.D., Associate Dean, and that pertaining to student affairs should be addressed to Victor Johnson, M.D., Dean of Medical Students.

RUSH MEDICAL COLLEGE, 1758 West Harrison Street, Chicago.—Chartered in 1837 and taught first class in 1843. First class graduated in 1844. In 1887 the College became the medical department of Lake Forest University, retaining, however, its self-government. This relationship was dissolved in April 1898, and in the same month affiliation with the University of Chicago was established. Since 1899 the first two years of the medical course have been given on the university campus. Clinical years only were offered at Rush Medical College. In May 1924, under a new agreement, the University of Chicago took over the work of Rush Medical College as a department of the university. The faculty is composed of 143 professors, 155 associates, instructors and others, a total of 298. The tuition fee is \$450 yearly. The registration for 1939-1940 was 212; graduates, 106. The next session begins Sept. 30, 1940, and ends June 11, 1941. The school is in session all year except the month of September. By resolution of the board of trustees of the University of

Chicago, undergraduate courses in the clinical years will terminate in June 1942, when the students now enrolled in these courses will have completed their studies. The college is now designated The Rush Graduate School of Medicine. Graduate courses are being organized. Wilber E. Post, M.D., has been appointed dean of the Graduate School. The Acting Dean of Rush Medical College is Earle Gray, M.D.

UNIVERSITY OF ILLINOIS COLLEGE OF MEDICINE, 1853 West Polk Street.—Organized in 1882 as the College of Physicians and Surgeons. The first class graduated in 1883. It became the Medical Department of the University of Illinois by affiliation in 1897. Relationship with the university was cancelled in June 1912, and was restored in March 1913, when the present title was assumed. Coeducational since 1898. Three years of collegiate work are required for admission. The curriculum covers four years of thirty-two weeks each, and a year of internship in an approved hospital. The B.S. degree in medicine is conferred at the end of the second year. The faculty is composed of 143 professors and 325 associates, instructors and assistants, a total of 468. The tuition is \$150 a year for students who are residents of Illinois; \$225 a year for nonresident students. The registration for 1930-1940 was 636; graduates, 162. The next session begins Sept. 23, 1940, and ends June 6, 1941. The Dean is David J. Davis, M.D.

INDIANA

Bloomington-Indianapolis

INDIANA UNIVERSITY SCHOOL OF MEDICINE, Bloomington; 1040 West Michigan Street, Indianapolis.—Organized in 1903 but did not give all the work of the first two years of the medical course until 1905. In 1907, by union with the State College of Physicians and Surgeons, the complete course in medicine was offered. In 1908 the Indiana Medical College, which was formed in 1905 by the merger of the Medical College of Indiana organized in 1878, the Central College of Physicians and Surgeons (organized in 1879), and the Fort Wayne College of Medicine (organized in 1879) merged into it. The first class was graduated in 1908. Coeducational since organization. The faculty consists of 270 professors, lecturers, associates and assistants. Three years of collegiate work are required for admission. The B.S. degree in medicine is conferred. The work of the first year is given at Bloomington and the work of the next three years at Indianapolis. The regular fee for the medical course for all four years is \$217 a year for residents of Indiana, and \$422 for nonresidents. The registration for 1939-1940 was 460; graduates, 105. The next session begins Sept. 14, 1940, and ends June 2, 1941. The Dean is Willis D. Gatch, M.D., Indianapolis.

IOWA

Iowa City

STATE UNIVERSITY OF IOWA COLLEGE OF MEDICINE, University Campus.—Organized in 1869. First session began in 1870. First class graduated in 1871. Absorbed Drake University College of Medicine in 1913. Coeducational since 1870. The faculty is made up of 56 professors, 74 lecturers, demonstrators and assistants, a total of 130. Three years of collegiate work are required for admission. The B.A. degree in the combined course of liberal arts and medicine is conferred. The course of study covers four years of thirty-four weeks each. The tuition fee is \$196 each year for residents of Iowa and \$460 for nonresidents. The registration for 1939-1940 was 293; graduates, 71. The next session begins Sept. 26, 1940, and ends June 2, 1941. The Dean is Ewen Murchison MacEwen, M.D.

KANSAS

Lawrence-Kansas City

UNIVERSITY OF KANSAS SCHOOL OF MEDICINE, Lawrence; 39th Street and Rainbow Boulevard, Kansas City.—Organized in 1880. It offered only the first two years of the medical course until 1905, when it merged with the Kansas City (Mo.) Medical College, founded in 1869, the College of Physicians and Surgeons, founded in 1894, and the Medico-Chirurgical College, founded in 1897. Absorbed Kansas Medical College in 1913. The first class graduated in 1906. The clinical courses are given at Kansas City. Coeducational since 1880. The faculty includes 65 professors and 140 instructors, assistants and others, a total of 205. The requirement for admission is three years of collegiate work. The B.S. degree in medicine is conferred at the end of the second year. The course covers four years of nine months each. The total fees for residents of the state are, respectively, \$157, \$163, \$165 and \$167. For nonresidents the fees are, respectively, \$267, \$343, \$415 and \$417. The registration for 1939-1940 was 294; graduates, 69. The next session begins Sept. 19, 1940, and ends June 9, 1941. The Dean is H. R. Wahl, M.D., Kansas City.

KENTUCKY

Louisville

UNIVERSITY OF LOUISVILLE SCHOOL OF MEDICINE, 101 West Chestnut Street.—Organized in 1837 as Louisville Medical Institute. The first class graduated in 1838, and a class graduated each subsequent year except 1863. In 1846 the name was changed to University of Louisville Medical Department. In 1907 it absorbed the Kentucky University Medical Department; in 1908, the Louisville Medical College, the Hospital College of Medicine and the Kentucky School of Medicine. In 1922

it changed its name to the University of Louisville School of Medicine. Coeducational since organization. Two years of collegiate work are the minimum requirement for admission. Preference is given applicants with a degree or three college years leading to a degree. The faculty numbers 77 professors, and 116 assistants, instructors and others, a total of 193. Course covers four years of thirty-two weeks each, exclusive of vacations and examinations. Fees are, respectively, \$450, \$450, \$450 and \$460. The registration for 1939-1940 was 341, graduates, 84. The next session begins Sept. 23, 1940, and ends May 31, 1941. The Dean is John Walker Moore, M.D.

LOUISIANA

New Orleans

LOUISIANA STATE UNIVERSITY SCHOOL OF MEDICINE, 1542 Tulane Avenue.—Organized January 1931 as Louisiana State University Medical Center. Present title in 1939. Coeducational. First session October 1931, with students of first and third year. Faculty comprises 34 professors and 171 assistant professors, instructors and assistants, a total of 205. Course covers four years of no less than 32 weeks each. A minimum of three years' collegiate work is required for admission. Total fees, \$133 each year for residents of Louisiana; additional tuition of \$400 each year for nonresidents. The registration for 1939-1940 was 351; graduates, 136. The next session begins Sept. 9, 1940, and ends May 31, 1941. The Dean is B. I. Burns, M.D.

TULANE UNIVERSITY OF LOUISIANA SCHOOL OF MEDICINE, 1430 Tulane Avenue.—Organized in 1834 as the Medical College of Louisiana. Classes were graduated in 1835 and in all subsequent years except 1863-1865, inclusive. It was transferred to the Medical Department of the University of Louisiana in 1847, and became the Medical Department of the Tulane University of Louisiana in 1884. Present title in 1913. Coeducational since 1915. The faculty comprises 29 professors and 206 associate and assistant professors, instructors and assistants, a total of 235. The course covers four years of thirty-two weeks each. A minimum of three years of collegiate work is required for admission. Total fees are, respectively, \$552, \$552, \$537 and \$547. The registration for 1939-1940 was 471; graduates, 120. The next session begins Sept. 26, 1940, and ends June 11, 1941. The Dean is Maxwell E. Lapham, M.D.

MARYLAND

Baltimore

JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE, 710 North Washington Street.—The nucleus of a Medical Faculty was constituted in 1883. Systematic postgraduate instruction in pathology and bacteriology was begun in 1886. School was fully organized and opened in 1893. The first class graduated in 1897. Coeducational since organization. The faculty consists of 71 professors and 405 instructors, assistants and others, a total of 476. The requirement for admission is a collegiate degree. The course extends over four years of eight and one-half months each. The total fees are, respectively, \$621, \$620, \$620 and \$620. The registration for 1939-1940 was 279; graduates, 68. The next session begins Sept. 24, 1940, and ends June 3, 1941. The Dean is Alan M. Chesney, M.D.

UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE AND COLLEGE OF PHYSICIANS AND SURGEONS, Lombard and Greene Streets.—Organized in 1807 as the College of Medicine of Maryland. The first class graduated in 1810. In 1812 it became the University of Maryland School of Medicine. Baltimore Medical College was merged with it in 1913. In 1915 the College of Physicians and Surgeons of Baltimore was merged and the present name assumed. Coeducational since 1918. The faculty consists of 49 professors and 272 associate and assistant professors and others, a total of 321. Three years of collegiate work are required for admission. The course covers four years of eight months each. The fees are, respectively, \$506, \$493, \$492 and \$512 for residents of the state; for nonresidents the fees are \$150 additional each year. The registration for 1939-1940 was 370; graduates, 100. The next session begins Sept. 26, 1940 and ends June 7, 1941. The Acting Dean is H. Boyd Wylie, M.D.

MASSACHUSETTS

Boston

BOSTON UNIVERSITY SCHOOL OF MEDICINE, 80 East Concord Street.—Organized in 1873 as a homeopathic institution. In 1874 the New England Female Medical College, founded in 1848, was merged into it. The first class was graduated in 1874. Became nonsectarian in 1918. Coeducational since organization. Three years of collegiate work are required for admission. The faculty includes 25 professors, 175 associates and others, a total of 200. The course covers four years. Total fees for each of the four years, respectively, are \$479, \$475, \$475, \$440. The registration for 1939-1940 was 205; graduates, 54. The next session begins Sept. 26, 1940, for 1st, 2d and 3d year students, and Sept. 16, 1940, for 4th year students, and ends June 16, 1941. The Dean is Alexander S. Begg, M.D.

HARVARD MEDICAL SCHOOL, 25 Shattuck Street.—Organized in 1782. The first class graduated in 1788. It has a faculty of 162 professors and 445 other instructors and assistants, a total of 607. Two years of collegiate work are required for admission. The total fees for each of the four years are \$420, plus \$5 the first year for matriculation. The registration for 1939-1940 was 522; graduates, 132. The next session begins Sept. 23, 1940, and ends June 19, 1941. The Dean is C. Sidney Burwell, M.D.

TUFTS COLLEGE MEDICAL SCHOOL, 416 Huntington Avenue.—Organized in 1893 as the Medical Department of Tufts College. The first class graduated in 1894. Coeducational since 1894. It has a faculty of 88 professors and 293 assistants, lecturers and others, a total of 381. A bachelor's degree is required for admission. The course covers four years of eight months each. The total fees for each of the four years are \$512, \$507, \$507 and \$517. The registration for 1939-1940 was 386; graduates, 96. The next session begins Sept. 18, 1940, and ends June 15, 1941. The Dean is A. Warren Stearns, M.D.

MICHIGAN

Ann Arbor

UNIVERSITY OF MICHIGAN MEDICAL SCHOOL.—Organized in 1850 as the University of Michigan Department of Medicine and Surgery. The first class graduated in 1851. Present title assumed in 1915. Coeducational since 1870. It has a faculty of 27 professors, 21 associate professors, 25 assistant professors, 126 assistants, instructors and lecturers; a total of 199. The entrance requirements are ninety semester hours. The curriculum covers four years of nine months each. The total fees for Michigan students are \$250 for each of the four years, respectively; for nonresidents \$400 a year. The registration for 1939-1940 was 466; graduates, 125. The next session begins Sept. 30, 1940, and ends June 21, 1941. The Dean is A. C. Furstenberg, M.D.

Detroit

WAYNE UNIVERSITY COLLEGE OF MEDICINE, 1516 St. Antoine Street.—Organized as the Detroit College of Medicine in 1885 by consolidation of Detroit Medical College, organized in 1868, and the Michigan College of Medicine, organized in 1880. Reorganized with the title of Detroit College of Medicine and Surgery in 1913. The first class graduated in 1886. In 1918 it became a municipal institution under the control of the Detroit Board of Education. In 1934 the name was changed by action of the Detroit Board of Education to Wayne University College of Medicine, as a part of the program of consolidation of the Detroit City Colleges into a university system. Coeducational since 1917. Entrance requirement is an academic degree or 90 semester hours of academic credit with "combined degree" guaranteed by school of arts and sciences. The faculty consists of 48 professors, 243 lecturers and others, a total of 291. The course covers four years of nine months each and a fifth year of intern work. The total fees for each of the first four years are, for Wayne County residents \$325, and for nonresidents outside of Wayne County \$425; for the fourth year a diploma fee of \$10.00. The registration for 1939-1940 was 245; graduates, 60. The next session begins Sept. 16, 1940, and ends June 14, 1941. The Dean is Edgar H. Norris, M.D.

MINNESOTA

Minneapolis

UNIVERSITY OF MINNESOTA MEDICAL SCHOOL.—Organized in 1883 as the University of Minnesota College of Medicine and Surgery, reorganized in 1888 by absorption of St. Paul Medical College and Minnesota Hospital College. The first class graduated in 1889. In 1908 the Minneapolis College of Physicians and Surgeons, organized in 1883, was merged. In 1909 the Homeopathic College of Medicine and Surgery was merged. Present title in 1913. Coeducational since organization. The faculty includes 204 professors, of whom 77 are on full time appointment and 127 on part time, and 134 instructors, 29 of whom are on full-time appointment and 105 on part time, a total of 338. The curriculum covers four years of nine months each, and a year's internship in an approved hospital. The school is operated on the four-quarter plan. The entrance requirements are three years of university work, which must include six semester credits of rhetoric, eight semester credits of physics; thirteen credits of general chemistry, qualitative and quantitative analysis, organic and physical chemistry; eight credits of general zoology and genetics and eugenics; four credits of general psychology, and a reading knowledge of scientific German, with a "C" average in all subjects and in the sciences. Students are required to meet the requirements for a degree of B.S. or B.A. before receiving the degree of Bachelor of Medicine (M.B.), which is granted at the end of the four-year course. The M.D. degree is conferred after a year of intern work, of advanced laboratory work, or of public health work has been completed. Students are graduated at the end of any quarter in which work is completed and examinations passed. Total fees are \$250 for residents and \$400 for nonresidents, each year of three quarters. The registration for 1939-1940 was 454; graduates, 104. The next session begins Sept. 30, 1940, and ends June 13, 1941. The Dean is Harold S. Diehl, M.D.

MISSOURI

St. Louis

ST. LOUIS UNIVERSITY SCHOOL OF MEDICINE, 1402 South Grand Boulevard. Organized in 1901 as the Marion-Sims-Beaumont Medical College by union of Marion-Sims Medical College, organized in 1890, and Beaumont Hospital Medical College, organized in 1886. First class graduated in 1902. It became the Medical School of St. Louis University in 1903. The faculty is composed of 76 professors and 247 instructors and assistants, a total of 323. The completion of three years of college study is the minimum admission requirement but students presenting meritorious credits in excess of the minimum are accepted by preference. The curriculum covers four years of thirty-two weeks each. The summer is optional and offers courses academically equivalent to those in the regular

session. The total fees are, respectively, \$530, \$525, \$525 and \$565. The registration for 1939-1940 was 418; graduates, 106. The next session begins Sept. 24, 1940, and ends June 1, 1941. The Dean is Alphonse M. Schwitala, S.J., Ph.D.

WASHINGTON UNIVERSITY SCHOOL OF MEDICINE, Kingshighway and Euclid Avenue.—Organized in 1842 as the Medical Department of St. Louis University. The first class graduated in 1843. In 1855 it was chartered as an independent institution under the name of St. Louis Medical College. In 1891 it became the Medical Department of Washington University. In 1899 it absorbed the Missouri Medical College. Coeducational since 1918. The faculty comprises 127 professors and 238 lecturers, instructors and others, a total of 365. Four years of collegiate work are required for admission. The B.S. degree in medicine is conferred at the end of the third or fourth year. The course is four years of eight months each. The total fees are, respectively, \$524, \$519, \$519 and \$424. The registration for 1939-1940 was 345; graduates, 95. The next session begins Sept. 26, 1940, and ends June 10, 1941. The Dean is Philip A. Shaffer, Ph.D.

NEBRASKA

Omaha

CREIGHTON UNIVERSITY SCHOOL OF MEDICINE, 306 North Fourteenth Street.—Organized in 1892 as the John A. Creighton Medical College. The first class graduated in 1893. Present title in 1921. Coeducational since organization. It has a faculty of 72 professors and 75 instructors, lecturers and assistants, a total of 147. Three years of collegiate work required for admission. The B.S. degree in medicine is conferred at the end of the second year. The curriculum covers four years of eight months each. The total fees for the four years are, respectively, \$393, \$393, \$348 and \$356, and \$100 additional each year for students who have not taken the major part of their work at Creighton University School of Arts and Sciences. The registration for 1939-1940 was 231; graduates, 57. The next session begins Sept. 24, 1940, and ends June 5, 1941. The Dean is Charles M. Wilhelmj, M.D.

UNIVERSITY OF NEBRASKA COLLEGE OF MEDICINE, Forty-Second Street and Dewey Avenue.—Organized in 1881 as the Omaha Medical College. The first class graduated in 1882. It became the Medical Department of Omaha University in 1891. In 1902 it affiliated with the University of Nebraska, with the present title. The instruction of the first two years was given at Lincoln and of the last two at Omaha until 1913, when the work of all four years was transferred to Omaha. Coeducational since 1882. The faculty is composed of 72 professors and 57 lecturers and instructors, a total of 129. Three years of collegiate work are required for admission. The B.S. degree in medicine is conferred at the end of the second year. The fees for the four years, respectively, are \$219, \$214, \$214 and \$214. The registration for 1939-1940 was 320; graduates, 76. The next session begins Sept. 23, 1940, and ends June 9, 1941. The Dean is C. W. M. Poynter, M.D.

NEW YORK

Albany

ALBANY MEDICAL COLLEGE, 47 New Scotland Avenue.—Organized in 1838. The first class graduated in 1839. It became the Medical Department of Union University in 1873. In 1915 Union University assumed educational control. Coeducational since 1915. The faculty is composed of 75 professors and 122 instructors, assistants and others, a total of 197. A collegiate degree is required for admission. The curriculum covers four years of eight months each. The total fees are, respectively, \$455, \$430, \$415 and \$425. The registration for 1939-1940 was 128; graduates, 29. The next session begins Sept. 9, 1940, and ends June 9, 1941. The Dean is R. S. Cunningham, M.D.

Brooklyn

LONG ISLAND COLLEGE OF MEDICINE, 350 Henry Street.—Organized in 1858 as the Long Island College Hospital. The first class graduated in 1860 and the last class in 1930. Reorganized with a new charter in 1930 as the present institution. The first class graduated in 1931. Coeducational. It has a faculty of 119 professors, associate, assistant, clinical and assistant clinical professors, and 185 lecturers, associates, instructors, assistants and others, a total of 304. Ninety semester hours of collegiate work are required for admission. The course covers four years. The total fee for each of the four years is \$610. The registration for 1939-1940 was 354; graduates, 81. The next session begins Sept. 9, 1940, for the fourth year and Sept. 23, 1940, for the other years, and ends June 7, 1941. The Dean is Jean Alonzo Curran, M.D.

Buffalo

UNIVERSITY OF BUFFALO SCHOOL OF MEDICINE, 24 High Street.—Organized in 1846. The first class graduated in 1847. It absorbed the Medical Department of Niagara University in 1898. Coeducational since organization. The faculty is composed of 86 professors and 193 associates, assistants and others, a total of 279. Two years of collegiate work are required for admission. The course covers four years of eight months each. The total fees are, respectively, \$530, \$525, \$520 and \$530. The registration for 1939-1940 was 259; graduates, 56. The next session begins Sept. 30, 1940, and ends June 7, 1941. The Dean is Edward W. Koch, M.D.

New York

COLUMBIA UNIVERSITY COLLEGE OF PHYSICIANS AND SURGEONS, (1) West One Hundred and Sixty-Eighth Street.—The medical faculty of Columbia College, then known as King's College, was organized in 1767.

Instruction was interrupted by the War of the Revolution. The faculty was reestablished in 1792 and merged in 1814 with the College of Physicians and Surgeons, which had received an independent charter in 1807. In 1860 the College of Physicians and Surgeons became the Medical Department of Columbia College. This merger became permanent by legislative enactment in 1891. Columbia College became Columbia University in 1896. The medical school has been coeducational since 1917. The faculty is composed of 273 professors and 549 instructors, demonstrators and others, a total of 827. Three years of collegiate work are required for admission. The work covers four years of eight months each. The total fees are, respectively, \$545, \$530, \$530 and \$550. The registration for 1939-1940 was 413; graduates, 102. The next session begins Sept. 19, 1940, and ends June 3, 1941. The Dean is Willard C. Rappleye, M.D.

NEW YORK MEDICAL COLLEGE, FLOWER AND FIFTH AVENUE HOSPITALS, 1 East 105th Street.—Organized in 1858. Incorporated in 1860 as the Homeopathic Medical College of the State of New York. The title New York Homeopathic Medical College was assumed in 1869; the title New York Homeopathic Medical College and Hospital in 1887; the title New York Homeopathic Medical College and Flower Hospital in 1908; the title New York Medical College and Flower Hospital in 1936; the present title of New York Medical College, Flower and Fifth Avenue Hospitals, June 22, 1938. The first class graduated in 1861. Coeducational since 1919. A baccalaureate degree or its equivalent required for admission. The course covers four years of eight months each. It has a faculty of 69 professors and associate professors, 29 assistant professors, and 228 lecturers and assistants, a total of 326. The fees are, respectively, \$645, \$635, \$635 and \$665. The registration for 1939-1940 was 278; graduates, 50. The next session begins Sept. 16, 1940, and ends June 6, 1941. The President is Claude A. Burrett, M.D.

NEW YORK UNIVERSITY COLLEGE OF MEDICINE, 477 First Avenue.—Organized in 1898 by the union of the New York University Medical College, organized in 1841, and the Bellevue Hospital Medical College, organized in 1861. Named University and Bellevue Hospital Medical College from 1898 to February 1935 when it was changed to New York University College of Medicine. First class graduated in 1899. Coeducational since 1919. The faculty is composed of 140 professors, associate, assistant, clinical and assistant clinical professors, and 379 lecturers, instructors and others, a total of 519. The course covers four years. Entrance requirements are that all candidates must have completed three full years of study in an approved college of arts and sciences. The fees for each of the four years are \$600. The registration for 1939-1940 was 495; graduates, 124. The next session begins Sept. 18, 1940, and ends June 11, 1941. The Dean is Currier McEwen, M.D.

CORNELL UNIVERSITY MEDICAL COLLEGE, 1300 York Avenue.—Organized in 1898. Coeducational since organization. The first year was given to approximately one-third of the class at Ithaca, but in 1938 this branch was discontinued and all work is now given in New York City. The faculty is composed of 135 professors and 304 assistants, lecturers, instructors, and others, a total of 439. All candidates for admission must be graduates of approved colleges or scientific schools, or seniors of approved colleges that will permit them to substitute the first year of this medical school for the fourth year of their college course and will confer on them the baccalaureate degree on the completion of the first year's work. The fees are, respectively: \$620, \$610, \$515 and \$525. The registration for 1939-1940 was 292; graduates, 70. The next session begins Sept. 17, 1940, and ends June 11, 1941. The Dean is William S. Ladd, M.D.

Rochester

UNIVERSITY OF ROCHESTER SCHOOL OF MEDICINE AND DENTISTRY, 260 Crittenden Boulevard.—Organized in 1925 as the Medical Department of the University of Rochester. Coeducational since organization. The faculty is composed of 66 professors, 200 lecturers, assistants, instructors and others, a total of 266. The work embraces a graded course of four years of nine months each. Three years of collegiate work are required for admission. The total fees for each year are \$500. The registration for 1939-1940 was 200; graduates, 45. The next session begins Sept. 16, 1940, and ends June 14, 1941. The Dean is George Hoyt Whipple, M.D.

Syracuse

SYRACUSE UNIVERSITY COLLEGE OF MEDICINE, 766 Irving Avenue.—Organized in 1872, when the Geneva Medical College, chartered in 1834, was removed to Syracuse, under the title "The College of Physicians and Surgeons of Syracuse University." Present title assumed in 1875, when a compulsory three-year graded course was established. The first class graduated in 1873 and a class graduated each subsequent year. In 1889 the amalgamation with the university was made complete. Course extended to four years in 1896. Coeducational since organization. The faculty is composed of 48 professors and 172 associate and assistant professors, lecturers and instructors, a total of 220. Three years of a recognized college course are required for admission. The course covers four years of thirty-four weeks each. The fee for each of the first three years is \$500; for the fourth year, \$510. The enrolment for 1939-1940 was 170; graduates, 40. The next session begins Sept. 16, 1940, and ends June 2, 1941. The Dean is H. G. Weiskotten, M.D.

NORTH CAROLINA

Durham

DUKE UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1925. The first class was admitted, Oct. 1, 1930. Coeducational. The faculty is composed of 12 professors and 144 associate and assistant professors, lecturers, instructors and assistants, a total of 156. The entrance require-

ments are ninety hours of collegiate work. The academic year consists of four quarters of eleven weeks each. Students either may study four quarters each year after the first year, and if satisfactory will receive the M.D. certificate after three and one quarter calendar years, or three quarters in each year, and if satisfactory will be graduated after four calendar years. The B.S. degree in medicine may be conferred for special work after six quarters. Students are urged to spend three years in hospital or laboratory work after graduation and must give assurance satisfactory to the executive committee that they will spend at least two years. The fees are \$450 for each year of three quarters. The registration for 1939-1940 was 259; graduates, 58. The next session begins Oct. 3, 1940, and ends June 6, 1941. The Dean is Wilburt C. Davison, M.D.

OHIO

Cincinnati

UNIVERSITY OF CINCINNATI COLLEGE OF MEDICINE, Eden and Bethesda Avenues.—Organized in 1909 by the union of the Medical College of Ohio (founded in 1819) with the Miami Medical College (founded in 1852). The Medical College of Ohio became the Medical Department of the University of Cincinnati in 1896. Under a similar agreement, March 2, 1909, the Miami Medical College also merged with the University when the title of Ohio-Miami Medical College of the University of Cincinnati was taken. Present title assumed in 1915. Coeducational since organization. Candidates for admission to the freshman class must present three years of college preparation of not less than ninety hours. Liberal Arts students of the University of Cincinnati may sign up for the seven-year combined Liberal Arts and Medical program. The B.Sc. degree is granted on the joint recommendation of the Faculties of the Colleges of Liberal Arts and Medicine at the end of the first medical year. The faculty consists of 112 professors, associate and assistant professors, 350 instructors, etc., a total of 462. The course covers four years of eight months each, on the completion of which the M.B. degree is granted. A year's internship in an approved hospital is required, on completion of which the M.D. degree is granted. Beginning with the fall session of 1940-1941 the fees will be as follows: For legal residents of Cincinnati \$485 a year, plus laboratory fees, (\$50 additional for those not legal residents of Cincinnati). The registration for 1939-1940 was 303; graduates, 66. The next session begins Sept. 20, 1940, and ends June 6, 1941. The Dean is Stanley Dorst, M.D.

Cleveland

WESTERN RESERVE UNIVERSITY SCHOOL OF MEDICINE, 2109 Adelbert Road.—Organized in 1843 as the Cleveland Medical College in cooperation with Western Reserve College. The first class graduated in 1844. It assumed the present title in 1881. In 1910 the Cleveland College of Physicians and Surgeons was merged. Coeducational since 1919. The faculty includes 89 professors and 233 lecturers, assistants and others, a total of 322. The curriculum covers three years of nine months each and one year of ten months. Three years of collegiate work are required for admission and a baccalaureate degree for graduation. The total fees are, respectively, \$442, \$430, \$415 and \$425. Beginning with the academic session of 1941-1942, the tuition fee will be increased by \$100 for each year. The registration for 1939-1940 was 265; graduates, 58. The next session begins Sept. 19, 1940, and ends June 11, 1941. The Dean is Torald Sollmann, M.D.

Columbus

OHIO STATE UNIVERSITY COLLEGE OF MEDICINE, Neil and Eleventh Avenues.—Organized in 1907 as the Starling-Ohio Medical College by the union of Starling Medical College (organized in 1847 by charter granted by the State Legislature changing the name from Willoughby Medical College, which was chartered March 3, 1834) with the Ohio Medical University (organized 1890). In 1914 it became an integral part of the Ohio State University with its present title. Coeducational since organization. The faculty consists of 76 professors, associate and assistant professors, 96 lecturers, instructors, demonstrators and others, a total of 172. Three years of collegiate work are required for admission. The course covers four years of thirty-four weeks each. Tuition fees are \$327 for the first year, and \$312 for each of the other three years for residents of Ohio, and \$150 additional for nonresidents. The registration for 1939-1940 was 307; graduates, 77. The next session begins Oct. 1, 1940, and ends June 16, 1941. The Dean is J. H. J. Upham, M.D.

OKLAHOMA

Oklahoma City

UNIVERSITY OF OKLAHOMA SCHOOL OF MEDICINE, 801 East Thirteenth Street.—Organized in 1900. Until 1910 gave only the first two years of the medical course at Norman, Oklahoma, after which a clinical department was established at Oklahoma City. The first class graduated in 1911. Coeducational since organization. Since September 1928 the entire four-year course has been given in Oklahoma City. It has a faculty of 27 professors, 28 associate professors, 18 assistant professors, 32 associates, 15 lecturers, 36 instructors, and 24 assistants, a total of 180. Three years of college work are required for admission. The B.S. in Medicine will not be conferred after June 3, 1940. The course covers four years of nine months each. Fees: \$50.00 "Maintenance and Incidental Fee" per semester, which began with the freshman class of 1939-1940. Other annual course fees average \$128, \$95, \$53, and \$58, in the order given, beginning with the freshman year. For students not residents of

Oklahoma there is a tuition charge of \$350 a year, plus laboratory and course fees as indicated for the different years. The registration for 1939-1940 was 231; graduates, 52. The next session begins Sept. 16, 1940, and ends June 9, 1941. The Dean is Robert U. Patterson, M.D., C.M.

OREGON

Portland

UNIVERSITY OF OREGON MEDICAL SCHOOL, Marquam Hill.—Organized in 1887. The first class graduated in 1888, and a class graduated each subsequent year except 1898. The Willamette University Medical Department was merged in 1913. Coeducational since organization. It has a faculty of 91 professors and 164 lecturers, assistants and others, a total of 255. Entrance requirements are three years of collegiate work. The course covers four years of thirty-three weeks each. The total fees are, respectively, \$380, \$375, \$370 and \$376 for residents of Oregon, and \$60 a year additional for nonresidents. The registration for 1939-1940 was 240; graduates, 49. The next session begins Oct. 1, 1940, and ends June 10, 1941. The Dean is Richard B. Dillehunt, M.D.

PENNSYLVANIA

Philadelphia

HAHNEMANN MEDICAL COLLEGE AND HOSPITAL OF PHILADELPHIA, 235 North Fifteenth Street.—Organized in 1848 as The Homeopathic Medical College of Pennsylvania. In 1869 it united with The Hahnemann Medical College of Philadelphia, taking the latter title. Assumed present title in 1885. The first class graduated in 1849. Three years of collegiate work in a college of arts and sciences are required for admission. It has a faculty of 80 professors and 158 lecturers, instructors, and others, a total of 238. The work covers four years of eight months each. Fees are, respectively, \$515, \$512, \$512 and \$535. The registration for 1939-1940 was 543; graduates, 127. The next session begins Sept. 30, 1940, and ends June 12, 1941. The Dean is William A. Pearson, M.D.

JEFFERSON MEDICAL COLLEGE OF PHILADELPHIA, 1025 Walnut Street.—Organized in 1825 as the Medical Department of Jefferson College, Canonsburg, Pa. It was chartered with its present title in 1838. Classes have been graduated annually beginning 1826. In 1838 a separate university charter was granted without change of title, since which time it has continued under the direction of its own board of trustees. It has a faculty of 83 professors, associate and assistant professors and 192 associates, lecturers, demonstrators and instructors, a total of 275. Four years of college work and a bachelor's degree are required for admission. The course of study covers four years of eight and one-half months each. The total fees are, respectively, \$455, \$440, \$430 and \$430. The registration for 1939-1940 was 497; graduates, 125. The next session begins Sept. 18, 1940, and ends June 6, 1941. The Dean is Henry K. Mohler, M.D.

TEMPLE UNIVERSITY SCHOOL OF MEDICINE, 3400 North Broad Street.—Organized in 1901. The first class graduated in 1904. Coeducational since organization. The faculty numbers 34 professors and 232 associates, assistants and others, a total of 266. Three years of collegiate work are required for admission. The fees for each of the four years, respectively, are \$500, \$490, \$480 and \$500. The registration for 1939-1940 was 446; graduates, 119. The next session begins Sept. 18, 1940, and ends June 12, 1941. The Dean is William N. Parkinson, M.D.

UNIVERSITY OF PENNSYLVANIA SCHOOL OF MEDICINE, Thirty-Sixth and Pine Streets.—Organized in 1765. Classes were graduated in 1768 and in all subsequent years except 1772 and 1775-1779, inclusive. The original title was the Department of Medicine, College of Philadelphia. The present title was adopted in 1909. It granted the first medical diploma issued in America. In 1916 it took over the Medico-Chirurgical College of Philadelphia to develop it as a graduate school. Coeducational since 1914. The faculty consists of 106 professors, associate and assistant professors, and 412 lecturers, associates, instructors and others, a total of 518. Three years of collegiate work are required for admission. The course covers four years of thirty-three weeks each. The tuition fee is \$500 each year, with a deposit fee of \$15, a general fee including student health of \$15 and a matriculation fee of \$5. The registration for 1939-1940 was 491; graduates, 134. The next session begins Sept. 23, 1940, and ends June 11, 1941. The Dean is William Pepper, M.D.

WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA, Henry Avenue and Abbottsford Road, East Falls.—Organized in 1850. Classes were graduated in 1852 and in all subsequent years except 1862. It has a faculty of 48 professors and 80 assistants, lecturers and others, in all, 128. Three years of collegiate work are required for admission. The curriculum covers four years of eight and one-half months each. Total fees are, respectively, \$447, \$433, \$433, \$455. The registration for 1939-1940 was 103; graduates, 18. The next session begins Sept. 18, 1940, and ends June 11, 1941. The Interim Dean is Catharine Macfarlane, M.D.

Pittsburgh

UNIVERSITY OF PITTSBURGH SCHOOL OF MEDICINE, Bigelow Boulevard.—Organized in 1886, as the Western Pennsylvania Medical College and in 1908 became an integral part of the University of Pittsburgh, removing to the university campus in 1910. The first class graduated in 1887. Coeducational since 1899. The faculty is composed of 31 professors and 331 associates, assistants and others, a total of 362. Entrance requirements are two years of collegiate work. The course of study is

four years of eight months each. The total fees are \$500 each year. The registration for 1939-1940 was 257; graduates, 46. The next session begins Sept. 23, 1940, and ends June 11, 1941. The Dean is W. S. McEllroy, M.D.

SOUTH CAROLINA

Charleston

MEDICAL COLLEGE OF THE STATE OF SOUTH CAROLINA, 16 Lucas Street.—Organized in 1823 as the Medical College of South Carolina. The first class graduated in 1825. In 1832 a medical college bearing the present title was chartered and the two schools continued as separate institutions until they were merged in 1838. Classes were graduated in all years except 1862 to 1865, inclusive. In 1913, by legislative enactment, it became a state institution. Coeducational from 1895 to 1912, when privileges for women were withdrawn, being restored in 1917. It has a faculty of 46 professors and 45 associates, instructors and others, a total of 91. The course covers four years of eight months each. Three years of collegiate work are required for admission. The total fees are \$272 each year. Fees for nonresidents of the state, \$422 each year. The enrollment for 1939-1940 was 171; graduates, 40. The next session begins Sept. 26, 1940, and ends June 5, 1941. The Dean is Robert Wilson, M.D.

TENNESSEE

Memphis

UNIVERSITY OF TENNESSEE COLLEGE OF MEDICINE, 874 Union Avenue.—Organized in 1876 at Nashville as Nashville Medical College. First class graduated 1877, and a class graduated each subsequent year. Became Medical Department of University of Tennessee in 1879. In 1909 it united with the Medical Department of the University of Nashville to form the joint Medical Department of the Universities of Nashville and Tennessee. This union was dissolved in 1911. The trustees of the University of Nashville by formal action of that board named the University of Tennessee College of Medicine as its legal successor. In 1911 it moved to Memphis, where it united with the College of Physicians and Surgeons. The Memphis Hospital Medical College was merged in 1913. Lincoln Memorial University Medical Department was merged in 1914. Coeducational since 1911. The faculty includes 104 professors and 146 assistants, instructors and others, a total of 250. Two years of collegiate work are required for admission. The B.S. degree in medicine is conferred at the end of the second year. The fees are \$120 quarterly. For residents of the state the charge is reduced \$50 each quarter. The registration for 1939-1940 was 439; graduates, 96. During the academic year of 1940-1941 the quarters begin July 5, Sept. 23, Dec. 30 and March 20, and end Sept. 21, Dec. 11, March 19 and June 7. The Dean is O. W. Hyman, Ph.D.

Nashville

MEHARRY MEDICAL COLLEGE, Eighteenth Avenue, North and Heffernan Street. (For Negro Youth.)—This school was organized in 1876 as the Meharry Medical Department of Central Tennessee College, which became Walden University in 1900. First class graduated in 1877. Obtained new charter independent of Walden University in 1915. Coeducational since 1876. The faculty is made up of 49 professors and 30 instructors and lecturers, 79 in all. Three years' work in a college of liberal arts is required for admission. The curriculum covers four years of thirty-two weeks each. Tuition fees are, respectively, \$300, \$290, \$280 and \$290 each year. The registration for 1939-1940 was 196; graduates 39. The next session begins Oct. 1, 1940, and ends May 27, 1941. The Dean is Edward L. Turner, M.D.

VANDERBILT UNIVERSITY SCHOOL OF MEDICINE, Twenty-First Street at Edgehill.—This school was founded in 1874. The first class graduated in 1875. Coeducational since September 1925. The faculty numbers 239. For matriculation, students must be graduates of collegiate institutions of recognized standing or seniors in absentia, who will receive the bachelor degree from their college after having completed successfully at least one year of work in the school of medicine. The course covers four years of nearly nine months each. The total fees are, respectively, \$415, \$415, \$415 and \$420. The registration for 1939-1940 was 200; graduates, 54. The next session begins Sept. 23, 1940, and ends June 11, 1941. The Dean is Walter S. Leathers, M.D.

TEXAS

Dallas

BAYLOR UNIVERSITY COLLEGE OF MEDICINE, 810 College Avenue.—Organized in 1900 as the University of Dallas Medical Department. In 1903 it took its present name and became the Medical Department of Baylor University. It acquired the charter of Dallas Medical College in 1904. Coeducational since organization. The first class graduated in 1901. The faculty consists of 113 professors and 103 instructors and assistants, a total of 216. Entrance requirements are three years of collegiate work. The course covers four years of eight months each. The fees are, respectively, \$414, \$404, \$399 and \$424. The registration for 1939-1940 was 305; graduates, 75. The next session begins Sept. 30, 1940, and ends June 2, 1941. The Dean is W. H. Moursund, M.D.

Galveston

UNIVERSITY OF TEXAS SCHOOL OF MEDICINE, 912 Avenue D.—Organized in 1891. The first class graduated in 1892. Coeducational since organization. It has a faculty of 45 professors and 53 instructors and lec-

turers, a total of 98. The curriculum covers four years of eight months each. The entrance requirement is three years of collegiate work. The total fees are, respectively, \$88, \$92, \$100 and \$102. There is a matriculation fee of \$50 for each year. The registration for 1939-1940 was 374; graduates, 90. The next session begins Oct. 1, 1940, and ends May 31, 1941. The Dean is John W. Spies, M.D.

VERMONT

Burlington

UNIVERSITY OF VERMONT COLLEGE OF MEDICINE, Pearl Street, College Park.—Organized with complete course in 1822. Classes graduated in 1823 to 1836, inclusive, when the school was suspended. It was reorganized in 1853 and classes were graduated in 1854 and in all subsequent years. Coeducational since 1920. It has a faculty of 61 professors and 53 instructors, and assistants, a total of 114. Three years of collegiate work are required for admission. The course of study covers four years of nine months each. For residents of Vermont the tuition fee is \$300 each session. Nonresidents are charged an additional \$150 each session. A \$25 fee is charged for the doctor's degree. The registration for 1939-1940 was 131; graduates, 36. The next session begins Sept. 18, 1940, and ends June 16, 1941. The Dean is Hardy A. Kemp, M.D.

VIRGINIA

Charlottesville

UNIVERSITY OF VIRGINIA DEPARTMENT OF MEDICINE.—Organized in 1827. Classes were graduated in 1828 and in all subsequent years except 1865. Coeducational since the session of 1920-1921. It has a faculty of 46 professors and 40 lecturers, instructors, assistants and others, a total of 86. Three years of college work are required for admission. For residents of Virginia the total fees are, respectively, \$419, \$401, \$366 and \$366. Nonresidents are charged an additional \$50 each year. The registration for 1939-1940 was 254; graduates, 62. The next session begins Sept. 12, 1940, and ends June 9, 1941. The Dean is Harvey Ernest Jordan, Ph.D.

Richmond

MEDICAL COLLEGE OF VIRGINIA, Twelfth and Marshall Streets.—Organized in 1838 as the Medical Department of Hampden Sydney College. Present title was taken in 1854. In 1913 the University College of Medicine was merged. In 1914 the North Carolina Medical College was merged. Coeducational since 1918. Classes were graduated in 1839 and in all subsequent years. It has a faculty of 80 professors and 126 lecturers, instructors and others, a total of 206. Three years of collegiate work are required for admission. The course covers four years of eight and one-half months each. Total fees are, respectively, \$344, \$344, \$329 and \$361. Nonresidents are charged an additional \$125 each year. The registration for 1939-1940 was 295; graduates, 66. The next session begins Sept. 3, 1940, for the first year class; Sept. 16, 1940, for all other classes, and ends June 3, 1941. The Dean is Lee E. Sutton Jr., M.D.

WISCONSIN

Madison

UNIVERSITY OF WISCONSIN MEDICAL SCHOOL, 408 North Charter Street.—Organized in 1907. Gave only the first two years of the medical course until 1925, when the clinical years were added. Coeducational since organization. Three years of collegiate work are required for admission. The B.S. degree in medical science is conferred at the end of the first year. It has a faculty of 64 professors and 67 lecturers, instructors and others, a total of 131. The fees are, respectively, \$222, \$212, \$182 and \$120. An additional fee of \$200 each year is charged nonresidents. The registration for 1939-1940 was 262; graduates 48. The next session begins Sept. 25, 1940, and ends June 23, 1941. The Dean is William S. Middleton, M.D.

Milwaukee

MARQUETTE UNIVERSITY SCHOOL OF MEDICINE, 561 North Fifteenth Street.—Organized in December 1912, by the merger of the Milwaukee Medical College and the Wisconsin College of Physicians and Surgeons. Coeducational since organization. It has a faculty of 178. Three years of collegiate work are required for admission. The curriculum covers four years of eight and a half months each, and one year's internship in an approved hospital. The fees are as follows: first year, \$462; second year, \$450; third year, \$450; fourth year, \$400. The registration for 1939-1940 was 313; graduates, 72. The next session begins Sept. 30, 1940, and ends June 11, 1941. The Dean is Eben J. Carey, M.D.

CANADA

Alberta

UNIVERSITY OF ALBERTA FACULTY OF MEDICINE, Edmonton.—Organized in 1913. Coeducational since organization. Has given the complete six-year medical course since 1924. The faculty includes 23 full time and 45 part time professors, instructors, assistants and others, a total of 68. Tuition for the first year is \$150, for the second, third and fourth years \$215, for the fifth and sixth years \$225. The registration for 1939-1940 was 233; graduates, 35. The next session begins Sept. 24, 1940, and ends May 13, 1941. The Acting Dean is John James Ower, M.D.

Manitoba

UNIVERSITY OF MANITOBA FACULTY OF MEDICINE, Bannatyne Avenue, Winnipeg. Organized in 1883 as Manitoba Medical College; first class graduated in 1886, and a class graduated each subsequent year. The college transferred all its property to the University of Manitoba in 1919 and assumed the present title. Coeducational since organization. The faculty includes 26 professors and 80 instructors and assistants, total of 106. Matriculation requirements include two years of collegiate work in the faculty of arts and science of a recognized university. The course extends over four years of eight months each and a hospital internship. The total fees are, respectively, \$298, \$293, \$293, \$293, \$77. The registration for 1939-1940 was 218; graduates, 45. The next session begins Sept. 20, 1940, and ends May 14, 1941. The Dean is A. T. Mathers, M.D.

Nova Scotia

DALHOUSIE UNIVERSITY FACULTY OF MEDICINE, Morris Street, Halifax.—Organized in 1867. Incorporated as the Halifax Medical College in 1875. Reorganized as an examining faculty, separate from the Halifax Medical College, in 1885. In 1911, in accordance with an agreement between the Governors of Dalhousie University and the Corporation of the Halifax Medical College, the work of the latter institution was discontinued and a full teaching faculty was established by the university. First class graduated in 1872. Coeducational since 1871. It has a faculty of 34 professors and 34 demonstrators, lecturers and others, a total of 68. Requires for matriculation two years of arts. The medical course covers four years and a hospital internship of one year. The fees are \$317, \$322, \$317, \$307 and \$307 for each year, respectively; \$250 additional registration fee payable by students outside the British Empire. The registration for 1939-1940 was 183; graduates, 35. The next session begins Sept. 10, 1940, and ends May 13, 1941. The Dean is H. G. Grant, M.D.

Ontario

QUEEN'S UNIVERSITY FACULTY OF MEDICINE, Kingston.—Organized 1854, first class graduated in 1855, and a class graduated each subsequent year. The faculty numbers 60. The fee for the first year is \$233 and \$255 for each of the other five years. The course covers six years of thirty teaching weeks each. The registration for 1939-1940 was 278; graduates, 62. The next session begins Sept. 26, 1940, and ends May 16, 1941. The Dean is Frederick Etherington, M.D.

UNIVERSITY OF WESTERN ONTARIO MEDICAL SCHOOL, Ottawa Avenue, London.—Organized in 1881 as the Western University Faculty of Medicine; first class graduated in 1883, and a class graduated each subsequent year. Present title in 1923. The medical school has been under the control of the Board of Governors of the University of Western Ontario since 1913. Coeducational since 1913. The faculty numbers 88. The course of study covers six years of eight months each. The total fees to residents of Canada for the last four years, respectively, are \$291, \$287, \$295 and \$295; nonresidents are charged \$516, \$512, \$520 and \$520 for each of the last four years. The registration for 1939-1940 was 223; graduates, 31. The next session begins Sept. 16, 1940, and ends May 17, 1941. The Dean is F. J. H. Campbell, M.D.

UNIVERSITY OF TORONTO FACULTY OF MEDICINE, Toronto.—Organized in 1843 as the Medical Faculty of King's College. Abolished in 1853. Reestablished in 1887. In 1902 it absorbed Victoria University Medical Department, and in 1903 it absorbed the Medical Faculty of Trinity University. Coeducational since 1903. The course of study covers six years of eight months each. The B.Sc. (Med.) degree is conferred at the end of the third or sixth year. It has a faculty of 74 professors and 348 lecturers, associates and others, a total of 422. The fees are \$226 for the first year; for the second, \$389; \$296 for the third year, \$321 for the fourth and fifth years, and \$353 for the sixth year. The registration for 1939-1940 was 777; graduates, 138. The next session begins Sept. 24, 1940, and ends May 17, 1941. The Dean is W. E. Gallie, M.D.

Quebec

LAVAL UNIVERSITY FACULTY OF MEDICINE, Quebec.—The Quebec School of Medicine, organized in 1848, became in 1852 the Laval University Faculty of Medicine; first class graduated in 1855, and a class graduated each subsequent year. The faculty numbers 81. The fees for each of the medical years are \$175 for residents of Canada. Nonresidents are charged an extra fee of \$175 each year. The premedical requirement is a B.A. degree or its equivalent. The registration for 1939-1940 was 314; graduates, 51. The next session begins Sept. 11, 1940, and ends May 30, 1941. The Secretary General of the University is Rev. Aimé Labrie.

MCGILL UNIVERSITY FACULTY OF MEDICINE, 3640 University Street, Montreal.—Founded in 1823 as Montreal Medical Institution; became the Medical Faculty of McGill University in 1829; first class graduated under the university auspices in 1833. No session between 1836-1839, owing to political troubles. In 1905 it absorbed the Faculty of Medicine of the University of Bishop's College. Coeducational since 1919. Three years of collegiate work are required for admission. The M.D. is conferred upon the completion of four sessions of 36 teaching weeks. Graduates are not eligible for licensure until they have satisfactorily completed one year of internship in an approved hospital. The faculty consists of 59 professors and 156 lecturers and others, a total of 215. The total fees for each of the four medical years are \$391 plus \$100 for non-British subjects. The registration for 1939-1940 was 444; graduates, 161. The

next session begins Sept. 4, 1940, and ends May 31, 1941. The Dean is J. C. Simpson, LL.D.

UNIVERSITY OF MONTREAL, FACULTY OF MEDICINE, 1265 St. Denis Street, Montreal.—Organized in 1843 as the Montreal School of Medicine and Surgery. In 1891, by Act of Parliament, the Medical Faculty of Laval University (organized in 1878) was absorbed. Present name by Act of Parliament in 1920. A class was graduated in 1843 and each subse-

quent year. Coeducational since 1925. The faculty numbers 135. The B.A. or B.S. degree, or its equivalent, is a prerequisite to the premedical year, which precedes a five year medical course, the fifth year being a compulsory internship year. The total fees for each of the five years respectively are \$245, \$229, \$271, \$235, \$218. The registration for 1939-1940 was 205; graduates 48. The next session begins Sept. 15, 1940, and ends June 15, 1941. The Dean is Albert LeSage, M.D.

DESCRIPTION OF SCHOOLS OF THE BASIC MEDICAL SCIENCES

ALABAMA

University (Tuscaloosa)

UNIVERSITY OF ALABAMA SCHOOL OF MEDICINE.—Organized in 1859 at Mobile as the Medical College of Alabama. Classes graduated in 1861 and subsequent years excepting 1862 to 1868, inclusive. Reorganized in 1897 as the medical department of the University of Alabama. Present title assumed in 1907, when all property was transferred to the University of Alabama. In 1920 clinical teaching was suspended and the medical school was removed to the university campus near Tuscaloosa. Coeducational since 1920. Minimum entrance requirements are three years of collegiate work. The course of study covers two years of thirty-six weeks each. The faculty includes 15 professors and 12 instructors, assistants, and others, a total of 27. The tuition fees are \$271 each year. Each class is limited to fifty students. The registration for 1939-1940 was 103. The next session begins Sept. 11, 1940, and ends May 27, 1941. The Dean is Stuart Graves, M.D.

MISSISSIPPI

University

UNIVERSITY OF MISSISSIPPI SCHOOL OF MEDICINE.—Organized in 1903. Coeducational since organization. Gives only the first two years of the medical course. A clinical department was established at Vicksburg in 1908 but was discontinued in 1910 after graduating one class. The session extends over eight and one-half months. Entrance requirement is three years of collegiate work. The B.S. degree in medicine is conferred at the end of the second year. The faculty includes 8 professors, 2 assistant professors, 1 associate professor, 1 adjunct professor, 20 instructors, assistants and others, a total of 32. The total fees for the first year are \$353, and for the second year \$325. The nonresident fee is \$50 additional each year. The registration for 1939-1940 was 44. The next session begins Sept. 16, 1940, and ends June 2, 1941. The Dean is B. S. Guyton, M.D.

MISSOURI

Columbia

UNIVERSITY OF MISSOURI SCHOOL OF MEDICINE.—Organized at St. Louis in 1845; was discontinued in 1855 but was reorganized at Columbia in 1872. Teaching of the clinical years was suspended in 1909. Coeducational since 1872. The faculty includes 21 professors and 14 instructors, lecturers and others, a total of 35. The entrance requirements are 90 semester hours of collegiate work. The B.S. degree in medicine is conferred at the end of the second year. Total fees for the first year are \$191, for the second, \$170. The registration for 1939-1940 was 75. The next session begins Sept. 16, 1940, and ends June 13, 1941. The Dean is Dudley S. Conley, M.D.

NEW HAMPSHIRE

Hanover

DARTMOUTH MEDICAL SCHOOL.—Organized by Dr. Nathan Smith in 1797. The first class graduated in 1798. It is under the control of the trustees of Dartmouth College. Courses of the third and fourth year were discontinued in 1914. The faculty consists of 21 professors and 11 instructors, a total of 32. Three years of collegiate work and candidacy for the bachelor's degree are required for admission. The course covers nine calendar months in each year, or eight months of actual teaching. Candidates for the A.B. degree in Dartmouth College may substitute the work of the first year in medicine for that of the senior year in the academic department. The tuition is \$450 for each year. The registration for 1939-1940 was 42. The next session begins Sept. 19, 1940, and ends June 13, 1941. The Dean is John P. Bowler, M.D.

NORTH CAROLINA

Chapel Hill

UNIVERSITY OF NORTH CAROLINA SCHOOL OF MEDICINE.—Organized in 1890. Until 1902 this school gave only the work of the first two years, when the course was extended to four years by the establishment of a department at Raleigh. The first class graduated in 1903. A class was graduated each subsequent year, including 1910, when the clinical department at Raleigh was discontinued. Coeducational since 1914. Three years of collegiate work are required for admission. The B.S. degree in medicine is conferred at the end of the first year. The faculty is composed of 15 professors and 9 instructors, a total of 24. The fees for each year are \$300 for residents; nonresidents, an additional fee of \$100. The registration for 1939-1940 was 79. The next session begins Sept. 24, 1940, and ends June 8, 1941. The Acting Dean is W. Reese Berryhill, M.D.

Wake Forest

WAKE FOREST COLLEGE SCHOOL OF MEDICAL SCIENCES.—Organized in 1902. The faculty numbers 16 professors, and 29 assistant professors, instructors, assistants and lecturers, making a total of 45. Only the first

two years of the medical course is offered. On Aug. 4, 1939, the Board of Trustees accepted the resources of the Bowman Gray Foundation in Winston-Salem and authorized the school to be moved to that city and expanded to offer instruction to include the entire four years leading to the M.D. degree. The physical plant is now under construction. The date of the beginning of the clinical years has not been announced. Ninety semester hours of collegiate work are required for admission. The B.S. degree is given after the completion of the first year in the School of Medical Sciences. Each annual course extends over nine months. Tuition for each year is \$300. The registration for 1939-1940 was 60. The next session begins Sept. 10, 1940, and ends June 2, 1941. The Dean is C. C. Carpenter, M.D.

NORTH DAKOTA

Grand Forks

UNIVERSITY OF NORTH DAKOTA SCHOOL OF MEDICINE.—Organized in 1905. Offers only the first two years of the medical course. Coeducational since organization. Three years' work in a college of liberal arts is required for admission. The B.S. degree in combined arts-medical course is conferred at the end of the second year. The faculty consists of 8 professors and 8 instructors, a total of 16. The fees are \$80 each year for resident students and \$165 for nonresidents. The registration for 1939-1940 was 49. The next session begins Sept. 16, 1940, and ends June 10, 1941. The Dean is H. E. French, M.D.

SOUTH DAKOTA

Vermillion

UNIVERSITY OF SOUTH DAKOTA SCHOOL OF MEDICAL SCIENCES.—Organized in 1907 as the University of South Dakota School of Medicine. Present title in 1937. Coeducational since organization. Offers only the first two years of the medical course. Three years' work in a college of liberal arts is required for admission. Students who complete the third year of premedical work in the College of Arts and Sciences at the University of South Dakota may apply the work of the first year of medicine to the A.B. degree. The B.S. degree is conferred at the end of the second year on those students who do not hold a previous Bachelor's degree. The faculty numbers 18. The tuition is \$150 each year for residents and \$250 for nonresidents. The registration for 1939-1940 was 50. The next session begins Sept. 18, 1940, and ends June 9, 1941. The Dean is Joseph C. Ohlmacher, M.D.

UTAH

Salt Lake City

UNIVERSITY OF UTAH SCHOOL OF MEDICINE, University Street.—Organized in 1906. Coeducational since organization. Gives only first two years of medical course. Each school year covers thirty-six weeks. Three years of collegiate work are required for admission. The medical faculty consists of 11 professors, 2 instructors, 20 lecturers and demonstrators, and 5 fellows, assistants, and technicians, a total of 38. The fees for each year are \$229. There is a nonresident fee of \$25 for each quarter. The registration for 1939-1940 was 56. The next session begins Sept. 23, 1940, and ends May 31, 1941. The Dean is L. L. Daines, M.D.

WEST VIRGINIA

Morgantown

WEST VIRGINIA UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1902, gives the first two years of the medical course. Coeducational since organization. Three years of collegiate work are required for admission. The B. S. degree in medicine is conferred at the end of the second year. Session extends through nine months. Faculty numbers 24. Fees for residents of the state are, respectively, \$254 and \$264; nonresidents, \$150 additional each year. The registration for 1939-1940 was 45. The next session begins Sept. 17, 1940, and ends June 7, 1941. The Dean is Edward J. Van Lier, M.D.

CANADA

Saskatchewan

UNIVERSITY OF SASKATCHEWAN SCHOOL OF MEDICAL SCIENCES, Saskatoon.—Organized in 1926. Coeducational. Offers the first two years of the medical course. Students require three more years of medicine for graduation. Two years of collegiate work are required for admission. The B.A. degree is conferred at the end of the second year. The medical faculty includes 7 professors and 4 lecturers and assistants, a total of 11. The fees are \$150 for each year. The registration for 1939-1940 was 43. The next session begins Sept. 23, 1940, and ends May 9, 1941. The Dean is W. S. Lindsay, M.B.

GRADUATE MEDICAL EDUCATION

Continuation Study for Practicing Physicians in the United States, 1939-1940

During a period of two years, beginning in October 1937, forty-six states and the District of Columbia were visited by a representative of the Council on Medical Education and Hospitals for the collection of data on the facilities available and programs in effect throughout the country for the continuing education of practicing physicians. The two states not visited were Delaware and Nevada. Progress reports on graduate activities of medical societies, medical schools, hospitals and other educational institutions appeared in the Educational Numbers of *THE JOURNAL* of 1938¹ and 1939.² A review of the Association's interest in graduate medical education since 1913 was published in composite form by the Council in May 1940.³

Presented herewith is a report on similar opportunities for continuation study offered during the fiscal year July 1, 1939, to July 1, 1940. The data which form the basis of this presentation were obtained by correspondence and questionnaire.

ORGANIZATION AND ADMINISTRATION

Opportunities for practicing physicians to engage in continuation study are outlined in tables 1-A, pages 710-712, and 1-B, pages 714-719, and table 2, pages 721-724. Courses reported in table 1-A were of an itinerant character, in that the instruction was taken to the physician in or near his local community. Centers listed in table 1-B provided ample facilities for clinical instruction. With certain exceptions, in the first type of course the instructor does most of the traveling, while in the latter the physician desiring continuation study frequently travels to the center where clinical teaching may be emphasized over longer periods. There were reported 129 programs for continuation study in forty-one states and the District of Columbia, including four states which made provision for such opportunities outside their states.

Forty-one itinerant programs of continuation study for practicing physicians were offered in or near the home communities of physicians in thirty-one states. Thirty-one of the courses offered were sponsored either singly or jointly by state medical societies. State boards of health sponsored twenty-two. Extension divisions of universities and medical schools sponsored four courses each. Of these forty-one itinerant study courses, twenty were directed by state medical societies, twelve by state boards of health, five by extension divisions of universities and four by tuberculosis organizations.

Continuation study in centers where there are ample facilities for clinical instruction is outlined in table 1-B, in which are listed eighty-eight courses offered in thirty-one states and the District of Columbia. Four other states provided opportunity for physicians to continue professional study elsewhere. Fifty-two courses were sponsored by medical schools, including six graduate and postgraduate schools, twenty-four by medical and clinical societies and academies of medicine, fifteen by departments of health, three by the Commonwealth Fund of New York and the Bingham Associates Fund, eight by hospitals, three by a university center for continuation study, three by universities not having medical departments and one each by a university extension division and an institute of technology.

Medical school graduate programs were usually directed by the dean of the school, although sometimes the professor in charge of the course, the chairman of a postgraduate committee or of a department of postgraduate education in the medical school or the director of the division of graduate study would act. Courses sponsored by medical societies were generally directed by committee chairmen.

METHODS OF INSTRUCTION

States which provided opportunities for physicians to continue professional study near their home communities offered general subjects of medicine in sixteen courses, obstetrics and gynecology in fifteen, pediatrics in fifteen, general and traumatic surgery in five and special subjects in thirteen.

Instruction was given for four or more days, in succession or intermittently, in twenty-one of these itinerant courses. Clinics, symposiums or conferences, in addition to lectures, were included in thirty-six courses. Local hospitals were utilized in thirty of the forty-one programs. Whenever hospitals were not suitable or available, public buildings, hotels, halls, club rooms and other local facilities were used. Approximately one half of the instructors engaged as field clinicians came from within the state where continuation study was offered, and in approximately one half of the courses out of state physicians participated. Of the total, three fourths of the instructors were from medical schools.

Where continuation study featured clinical instruction at one center, such subjects as general medicine, obstetrics, pediatrics and surgery were included. All but ten of the graduate programs of longer duration emphasized clinical instruction. Opportunities were given for continuing study of special as well as general subjects of medicine, including allergy, anesthesia, broncho-esophagology, cardiology, electrocardiography, endocrinology, forensic medicine, genito-urinary surgery, gastroscopy, gynecology, hematology, industrial medicine, laboratory procedures, metabolism, ophthalmology, otolaryngology, physical therapy, psychiatry, public health, radiology, tuberculosis, urology and venereal diseases. Other special courses were available at thirteen medical schools and universities. Forty-three medical schools participated in postgraduate programs in medical centers. In only ten centers was instruction in preclinical subjects offered.

The duration of clinical study varied from five days to one year. Forty-seven of the eighty-eight courses reported lasted from five days to three weeks. Twenty-three programs were conducted over periods of four weeks or more. Thirteen courses fell within both categories and five others were of variable duration. The time of year in which instruction was given varied considerably. In some of the medical schools it was found necessary to accept physicians for short terms of graduate study during vacation periods in order to accommodate them when undergraduate students were not in attendance.

Something more than didactic lectures was included in the courses given with a few exceptions. Laboratory demonstrations, clinics, ward rounds, round table discussions, clinical pathologic and other conferences, symposiums and bedside teaching as well as other practical

(Continued on page 713)

1. J. A. M. A. 111: 801 (Aug. 27) 1938.

2. J. A. M. A. 113: 773 (Aug. 26) 1939.

3. Graduate Medical Education in the United States: I. Continuation Study for Practicing Physicians, 1937 to 1940, American Medical Association, 1940.

TABLE 1.—CONTINUATION COURSES FOR PRACTICING PHYSICIANS, 1939-1940
A. In Proximity to Their Homes

Location of Course	Sponsoring Agencies	Director of Program	Subjects	Duration of Course	Time Given	Type of Instruction	Facilities for Graduate Programs	Instructors	Persons Eligible for Admission	Regis. Approximate Contribution No. M.D.'s attending	Additional Contributing Agencies and Funds
Alabama 30 centers (6 circuits)	St. Med. Assn., St. Dept. Public Health, Med. Ext. Div., Tulane U. of La.	Director, Med. Ext. Div., Tulane U. of La.	General Medicine	1 day weekly, 6 times	April through September	Lectures, Clinics, Demonstrations, Round Table Discussions, Clinical Pathologic Conference, Consultation Service	Hospitals and other local facilities	Med. sch.	M.D.'s	\$5	452 (5 circuits only) Commonwealth Fund
Arizona Statewide	St. Med. Assn. and St. Bd. of Health	Director, Maternal and Child Health, St. Bd. of Health	Pediatrics, Obstetrics and Gynecology	1 day weekly, 3 times	Varies	Lectures and Round Table Discussions	Hospitals and public lecture rooms	Med. sch.	M.D.'s	No	170 Co. Med. Soes.
Arkansas 6 centers	St. Med. Soc. and St. Bd. of Health	Director, Div. of Mat. & Ch. Health, St. Bd. of Health	Pediatrics	1 day weekly, 6 times	May and June	Lectures, Round Table Discussions, Clin. Path. Confs.	Public buildings	Out of state	M.D.'s	No	210
California 13 centers	St. Med. Assn.	Secretary, Comm. on P. G. Activities	General	1 to 3 days	Throughout year	Lectures, Clinics, Symposiums, Demonstrations, Round Table Discussions	Hospitals	Med. sch. and in state	Co. or State Med. Soc. members	No	863 Co. Med. Soes.
Rural counties	Calif. T. B. Assn.	Chairman, Comm. on P. G. Educ.	Diseases of the Chest	1 day and evening	Throughout year	Through out Clinics, Symposiums	Hospital	Med. sch. and in state	Co. and St. Med. Soc. members	No	... St. Med. Assn.
Georgia 30 centers	St. Dept. of Public Health	Assistant Director	Veneral Diseases, Congenital Syphilis, Cancer Control, Tuberculosis, The Infant, Obstetrics, Laboratory Aids	2 days	Oct. and Nov., Jan. and Feb.	Lectures, Round Table Discussions	.....	In state	M.D.'s	No	517 Co. Med. Soes., Co. Bds. of Health, U. S. Public Health Service
Idaho 5 centers	St. Div. of Public Health and St. Med. Assn.	Director, St. Div. of Public Health	Pediatrics, Gynecology and Obstetrics, Dermatology and Syphilis	1 day	April	Lectures, Clinics, Demonstrations	Hospitals	Med. sch., out of state	M.D.'s	No	... ..
Illinois 4 centers	St. Med. Soc.	Chairman, Scientific Service Comm.	General	1 day	Nov., Dec., Mar. and April	Lectures, Clinics, Round Table Discussions	Hospitals	Med. sch. and in state and out of state	Co. Med. Soc. members	No	712
17 centers	St. Dept. of Health and St. Med. Soc.	Chairman, Scientific Service Comm., St. Med. Soc.	Obstetrics, Pediatrics	1 to 2 days monthly, 4 to 6 times	Throughout year	Lectures, Clinics, Symposiums, Demonstrations	Hospitals	Med. sch. and in state and out of state	M.D.'s	No	1,000 Federal funds
Indiana 9 centers	Indiana T. B. Assn.	Supt. of local sanatorium	Tuberculosis	1 day	Fall	Lectures, Clinics, Round Table Discussions	T. B. hospitals	In state	M.D.'s	No	169 St. Med. Assn.
12 regional centers	St. Bd. of Health and Ch. Health, St. Bd. of Health	Chief, Bur. of Mat. and Ch. Health, St. Bd. of Health	Obstetrics, Pediatrics	1 day weekly, 4 to 6 times	Spring	Lectures, motion pictures	Hospitals	Med. sch.	M.D.'s	No	1,185 Indiana U. Sch. of Med. and St. Med. Assn.
Iowa 13 centers	St. Med. Soc.	Chairman, Speakers Bureau	General	Once weekly or monthly, 4 to 10 times	Spring and Fall	Lectures, Symposiums, Demonstrations	Hospitals and hotels	Med. sch. in state and out of state	Co. and St. Med. Soc. members	\$5 to \$7.50	637 St. U. of Iowa Coll. of Med., St. Bd. of Health
Kansas Statewide	St. Bd. of Health and St. Med. Soc.	Secretary, St. Bd. of Health and St. Med. Soc. committees	Obstetrics and Pediatrics, Cancer, Veneral Diseases, Tuberculosis	1 day weekly, 4 times (Obs., Ped.), 2 days (V. D.), 1 day (Ca)	Varies	Lectures and Discussions	Hospitals and hotels	Med. sch. and in state and out of state	M.D.'s	No	612 U. S. Public Health Service, U. S. Child Hygiene, Kansas T. B. and Health Assn.

Louisiana 13 centers	Louisiana St. U. Grad. Sch. of Med. and Gen. Ext. Div.	Dean, Grad. Sch. of Med.	General	1 to 4 evening programs	Throughout year	Lectures, Sym- posiums, Discus- sions	Public buildings	Med. sch.	Co. and St. Med. Soc. members	No	386	.....
8 centers	St. Ind. of Health and St. Med. Soc.	Director, Mat.-Child Health Div., St. Bd. of Health	Obstetrics	1 day weekly, 8 times	Varies	Lectures, Round Table Discussions, Clin. Path. Confs.	Public buildings	Med. sch. and in state	M.D.'s	No	230	.....
Massachusetts 21 centers	St. Med. Soc. and Dept. of Public Health	Secretary, Exec. Comm. on P. G. Instr., St. Med. Soc.	General	1 day weekly, 8 to 10 times	Spring and Fall	Lectures, Clinics, Symposiums	Hospitals	In state and med. sch.	Registered phys- icians in Mass.	No	984	U. S. Public Health Service, U. S. Chil- dren's Bureau
Michigan 8 centers	St. Med. Soc. and Univ. of Mich.	Chairman, Dept. of P. G. Med.	General	1 day weekly, 8 times	April and October	Lectures, Clinics, Symposiums	Hospitals	Med. sch.	M.D.'s	No	1,165	St. Dept. of Health, Rackham Fund, Kellogg Foundation, Wayne U. Coll. of Med.
4 centers	St. Dept. of Health, St. Med. Soc., Mich. Br. Amer. Acad. Fed.	Director, Bureau of Mat. and Ch. Health, St. Dept. of Health	Pediatrics	1 day weekly, 5 times	May	Lectures, Round Table Discussions	Hospitals and hotels	In state and med. sch.	M.D.'s	No	306	Federal funds
Minnesota 8 centers	St. Dept. of Health, St. Med. Assn.	Exec. Officer and Asst. Dir. of V. D. Control, St. Dept. of Health	Diagnosis and Treatment of Syph- ilis and Gonorrhea	1 day weekly, 8 times	Oct. and Nov.	Lectures, Round Table Discussions	Public buildings	Med. sch.	Co. or St. Med. Soc. members	No	244	U. of Minn. Med. Sch., Federal funds
2 centers	U. Minn. General Extension Division	Director, Extension Division	General	1 day weekly, 8 times	Varies	Lectures	Public buildings	In state med. sch.	Co. Med. Soc. members	..	12-18 (average at each session)	.....
15 centers	Minn. Public Health Assn.	Executive Secretary	New Advances in Tuberculosis	1 day	Varies	Lectures, Clinics, Demonstrations, Round Table Dis- cussions	Hospitals	Med. sch.	M.D.'s	No	30-50 (average at each session)	Local Co. Med. Soc.
Mississippi Statewide (10 centers)	St. Med. Assn., St. Ind. of Health, Tulane U. of La. Sch. of Med.	Director, Dept. of Grad. Med. Studies, Tulane U.	Gynecology, Surgery, Syphilology	2-3 days	Throughout year	Lectures, Clinics, Demonstrations, Round Table Dis- cussions, Consulta- tions	Hospitals	Med. sch.	M.D.'s	\$5	219	Commonwealth Fund
Missouri 21 county and district socs.	St. Med. Assn.	Chairman, Comm. on P. G. Course	General	Day or evening	Throughout year	Lectures, Discus- sions	Hospitals or halls	Med. sch. and in state	St. Med. Assn. members	No	...	.....
3 centers	Mo. T. B. Assn.	President	Diagnosis of Tuberculosis	1 evening	Varies	Lectures, Clinics, Symposiums, Dem- onstrations, Round Table Discussions	T. B. hospitals	In state	M.D.'s	No	114	.....
Montana 8 centers	St. Med. Assn. and St. Ind. of Health	Chairmen, P. G. Educ. and Mat. and Ch. Health Comms.	Pediatrics and Obstetrics	1½ days	May and June	Lectures, Round Table Discussions	Lecture rooms	Med. sch.	M.D.'s	No	174	.....
Nebraska 15 centers	St. Med. Assn. and St. Dept. Health	Director, Div. of Mat. and Ch. Health, St. Dept. of Health	Obstetrics and Pediatrics	1 day and 1 day weekly, 2 to 4 times	Nov. and April	Lectures, Clinics, Symposiums	Hospitals	Med. sch.	M.D.'s	No	355	Federal funds
New Jersey 6 centers	St. Med. Soc.	Chairman, Comm. on P. G. Education	Medicine, Surgery, and Specialties	1 day weekly, 6 times	Winter and Spring	Lectures	Hospitals and Co. Med. Soc. rooms	Med. sch.	Co. or St. Med. Soc. members	\$5 to \$10	333	Rutgers University, Extension Division
New York 23 centers	St. Med. Soc. and St. Dept. of Health	Chairman, Comm. on Public Health and Educ., St. Med. Soc.	General	Once weekly, 1 to 7 times	Throughout year	Lectures, Demon- strations	Hospitals	Med. sch.	Co. or St. Med. Soc. members	No	653	.....

TABLE 1.—CONTINUATION COURSES FOR PRACTICING PHYSICIANS, 1939-1940—CONTINUED

A. In Proximity to Their Homes—Continued

Location of Course	Sponsoring Agencies	Director of Program	Subjects	Duration of Course	Time Given	Type of Instruction	Facilities for Graduate Programs	Instructors	Persons Eligible for Admission	Regis- tration Fee	Approximate No. M.D.'s Attending	Additional Contributing Agencies and Funds
North Carolina												
3 centers	U. of North Carolina Extension Div. and Med. Sch.	Assistant Director, Extension Div.	General Medicine, Surgery	1 day weekly, 6 times	Spring	Lectures, Clinics	Hospitals and hotels	Out of state and med. sch.	M.D.'s	\$15	325	.....
Ohio												
5 centers	St. Med. Assn.	Chairman, Comm. on Education	General	6 sessions, Fall biweekly	Fall	Lectures	Public buildings	In state and med. sch.	Co. or St. Med. Soc. members	No	932	None
Oklahoma												
45 centers (9 circuits)	St. Med. Assn.	Field Dir., Comm. on P. G. Study	Pediatrics	1 day weekly, 10 times	Throughout year	Lectures, Clinics, Demonstrations, Round Table Discussions	Hospitals, public lecture halls	Out of state	M.D.'s	\$6	235 (all circuits not completed)	St. Health Dept., Commonwealth
44 centers	St. Med. Assn. and St. Dept. of Health	Chairman, Cancer Comm., St. Med. Assn.	Diagnosis and Treatment of Cancer	1 session	Feb. and March	Lectures, Clinics	Hospitals, outpatient departments	Out of state	Co. or St. Med. Soc. members	No	1,172	Amer. Soc. for the Control of Cancer
Pennsylvania												
Statewide	St. Med. Soc.	Chairman, Comm. on Grad. Educ.	General	1 day weekly, 6 times	Varies	Lectures, Demonstrations, Round Table Discussions	Hospitals, medical schools, state health dept.	Med. sch.	Co. or St. Med. Soc. members	\$5-\$10	2,867	.....
Tennessee												
45 centers (9 circuits)	St. Med. Assn.	Chairman, Comm. on P. G. Instr. in Ped.	Pediatrics	1 day weekly, 10 times	Throughout year	Lectures, Clinics, Demonstrations, Consultation Service	Hospitals, public buildings	Out of state	M.D.'s	\$2.50 to \$10	772 (7 circuits)	St. Health Dept., U. of Tenn. and Vanderbilt U. Med. Schs., Commonwealth Fund
Texas												
Statewide	St. Med. Assn. and St. Dept. of Health	Director, Mat. and Child Health, St. Dept. of Health	Obstetrics and Pediatrics	1 day	Fall, Winter and Spring	Lectures and Demonstrations	Hospitals and public buildings	In state	M.D.'s	No	450	Federal funds
Vermont												
20 centers	St. Dept. of Public Health	Director, Div. of T. B.	Pulmonary Tuberculosis	1 session	Varies	Clinics	Hospitals	Med. sch.	M.D.'s	No	80	None
Virginia												
Statewide (85 centers)	St. Med. Soc. and St. Dept. of Health	St. Health Commissioner	Obstetrics	4 times yearly	Varies	Clinics, Demonstrations, Round Table Discussions	Hospitals, clinics and health centers	Med. sch.	M.D.'s	No	260	U. S. Children's Bureau
1 centers	St. Med. Soc.	Exec. Sec'y, Dept. of Clin. and Med. Educ.	Internal Medicine, Surgery, Obstetrics, Gynecology, Pediatrics	1 day weekly, 6 times	Feb., Mar. and April	Lectures, Clinics, Round Table Discussions	Hospitals	Med. sch. and out of state	Co. or St. Med. Soc. members	\$5	185	U. of Va. Ext. Div.
Washington												
12 centers	St. Med. Soc. and St. Dept. of Health	Director, Mat. and Ch. Hygiene Div., St. Dept. of Health	Obstetrics	3 days	Summer	Lectures	Public lecture rooms	Med. sch.	M.D.'s and others on invitation	No	200	None
West Virginia												
10 centers	St. Med. Assn. and St. Health Dept.	Exec. Sec'y, St. Med. Assn.	Pediatrics, Obstetrics, Venereal Disease	1 day weekly, 5 times	July and August	Lectures, Demonstrations	Public buildings	Med. sch.	M.D.'s	No	350	U. S. Children's Bureau
Wisconsin												
3 centers	St. Med. Soc.	Chairman, Comm. on P. G. Work	Medicine, Surgery, Pediatrics and Obstetrics	1 day	April	Lectures, Clinics, Round Table Discussions	Public halls	Med. sch.	Co. or St. Med. Soc. members	\$5	450	St. Dept. of Health

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clinical demonstrations were attempted. Laboratory as well as clinical facilities were utilized. In addition to medical schools which opened their facilities to practicing physicians for short periods of clinical study, use was made of hospitals, medical society buildings, outpatient clinics, health agencies and, in two instances, hotels.

REGISTRATION

All continuation courses were open to licensed physicians practicing in or near the community in which the instruction was given. In some only practicing physicians were admitted to the course and, in fifteen of the forty-one itinerant opportunities, membership in county or state medical societies was required. Registration varied from fifteen at each session in one instance to a total of 2,867 in one state. The median number of practicing physicians who enrolled for these courses of continuation study was 390.

Eligibility for admission to courses featuring clinical instruction included a doctor of medicine degree in every instance and additional qualifications in some. The yearly attendance varied appreciably; 500 or more physicians were accommodated in seven centers, from 200 to 500 in eight, from 100 to 200 in eight others, while less than 100 were in attendance in the remaining courses listed. Where large numbers of physicians were accommodated, either many varied courses with limited attendance were scheduled, like those offered at Columbia University in New York City, or the instruction simulated that given in clinical conferences, such as the annual program of the Philadelphia County Medical Society.

FINANCIAL SUPPORT

For thirty of the forty-one itinerant continuation courses no registration fees were charged; in ten, fees varied from \$2.50 to \$15. Thirty-one state medical societies contributed materially and financially. State boards of health aided in the support of twenty-seven courses; federal agencies contributed to the support of ten and universities, including medical and graduate schools and extension divisions, twelve. The Commonwealth Fund has given financial aid for promoting graduate study in four states, and tuberculosis associations of four states gave financial support.

With nineteen exceptions, continuation courses featuring clinical material at one center required fees of from \$5 to \$1,000. Medical schools most frequently were the contributing agencies, with medical societies, state departments of health and private foundations and funds sharing part of the expenses of clinical instruction. Sixteen courses received financial support from federal agencies. In all but two cases this aid was supplied by state boards of health to medical schools. Through the financial assistance of the Bingham Associates Fund, physicians of Maine traveled to Boston for continuation study. Similarly, through the aid of the state health department, physicians from Utah enrolled in courses offered by the University of California. Federal funds supplied to health departments in Minnesota, North Dakota and South Dakota were used to pay the expenses of physicians taking courses at the Center for Continuation Study connected with the University of Minnesota.

CLINICAL CONFERENCES, GRADUATE ASSEMBLIES AND STUDY COURSES

Information was received regarding fifty-seven clinical conferences, graduate assemblies and study courses. These data are summarized in table 2, page 721. Such

opportunities were provided for practicing physicians in thirty-two states and the District of Columbia by state and county medical societies, clinical societies, medical schools and health departments. Forty-four of the programs were sponsored by medical and clinical societies, some in cooperation with other organizations and ten by medical schools, either independently or jointly with medical societies, departments of health or hospitals.

Clinical conferences, with a few exceptions, were of from one to four days' duration and usually held in the spring or fall in metropolitan areas with facilities to accommodate large assemblies. Lectures were given in all but two programs. In more than half of these conferences, clinics as well as round table discussions and demonstrations were conducted.

About one half of the conferences were concerned with general discussions in medicine and surgery and the remainder with such subjects as obstetrics, pediatrics, heart disease, endocrinology, tuberculosis, venereal disease and pneumonia. In forty-one of the fifty-seven programs given, the facilities of hospitals and medical schools were used. Medical school instructors were engaged for forty-four of the programs. Physicians not in teaching positions but from within the state in which the clinical conference was held participated in thirty-one programs, and out of state speakers were engaged in thirty-six.

Practicing physicians were eligible for admission to all conferences and in eleven membership in county, state or special medical societies was required. In all but twenty-six programs, registration fees varied from \$1 to \$30. The approximate yearly attendance at clinical conferences ranged from seven to 1,015, the median being 117.

Forty-four programs were supported either in whole or in part by medical, clinical or special societies. Twenty-three were independent efforts on the part of these societies. City and state departments of health contributed to the support of fourteen courses. Two of these were sponsored and financed by health departments alone. Medical schools, universities or colleges aided in the support of eighteen conferences and assemblies. There were three independent efforts by one or more of the agencies just named. Federal and state agencies, hospitals and private funds aided financially eighteen programs.

SUMMARY

1. Forty-one states and the District of Columbia provided a form of continuation study for physicians and, when clinical conferences were included, forty-four states and the District of Columbia offered graduate opportunities. Delaware, Nevada and New Mexico reported no programs.

2. Forty-one itinerant courses of continuation study for practicing physicians were offered in or near the home communities of physicians in thirty-one states. State medical societies sponsored the majority, with state boards of health as well as extension divisions of universities and medical schools as joint sponsors in many states. Medical schools sponsored most of the eighty-eight opportunities where clinical instruction might be featured at one center over five or more days in thirty-one states and the District of Columbia. Five states including Utah provided for such study outside the state.

3. According to reports received, the approximate attendance at courses of an itinerant nature, clinical

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TABLE 1.—CONTINUATION COURSES FOR PRACTICING PHYSICIANS, 1939-1940
B. Where There Are Ample Facilities for Clinical Instruction—Five or More Days

Location of Course	Sponsoring Agencies	Director of Program	Subjects	Dura- tion of Course	Time Given	Type of Instruction	Facilities for Graduate Programs	Instructors	Eligible for Admission	Registra- tion Fee and/or Tuition	Approv- ance No. of M.D.'s Attending	Additional Contributing Agencies and Funds
Alabama												
Birmingham	Jefferson Co. Bd. of Health, Alabama T. B. Assn.	Co. Health Officer and Exec. Sec'y, T. B. Assn.	Tuberculosis, Venereal Diseases, Pediatrics, Obstetrics	5 days	Varies	Lectures, Clinics, Demonstrations, Pneumothorax Technique, X-Ray Conferences	Maternity Clinic Bldg, Slossfield Health Center	In state	Negro M.D.'s	No	11	Birmingham Health Assn., U. S. Children's Bureau
Tennessee												
Tuskegee Institute	John A. Andrew Clin. Soc.	Chairman, Program Comm.	General	1 week	April	Lectures, Clinics, Round Table Discussions	Hospital, out-patient clinics	Med. sch., in state and out of state	Negro M.D.'s	\$5	204	John A. Andrew Mem'l Hosp.
California												
Pasadena	Huntington Mem'l Hosp.	Chairman, P. G. Comm.	General Medicine and Surgery	1 week	October	Lectures, Clinics, Clin. Path. Confs.	Hospital	Med. sch.	M.D.'s	\$10	70	S. P. Black Mem'l Lecture Assn.
San Francisco	Stanford U. Sch. of Med.	Dean	General Review Courses	1 week	September	Lectures, Demon- strations, Ward Rounds, Clinics, Lab- oratory Experience	Hospital	Med. sch.	M.D.'s	\$25-\$35	150	San Francisco Dept. of Public Health, San Francisco Hosp.
District of Columbia												
Washington	St. Dept. of Public Health, U. of Calif. Med. Sch.	Chief, Bur. Child Hyg., St. Dept. of Public Health	Obstetrics, Pedi- atrics	1-2 weeks	Summer	Lectures, Clinics, Symposiums, Dem- onstrations, Round Table Discussions	Hospital, out- patient depart- ment	Med. sch.	M.D.'s	No	29	St. Med. Assn., Social Security Bd.
	Catholic U. of America	Head, Dept. of Psy- chol. & Psychiatry	Adult and Child Psychiatry, Men- tal Hygiene	1-2 semes- ters	Through- out year	Lectures, Clinics, Demonstrations	Child Center at Univ.	Univ. Dept. of Psych. and Psycho.	M.D.'s	\$10 (per sem. hr. for part time) \$375 (full time)	1	Rockefeller Founda- tion
	George Washington U. Sch. of Med.	Dean	Ophthalmology	3 courses, 1 week each	March and April	Lectures, Discus- sions	Medical School, hospital, hotel	Med. sch., out of state, med. officers of Army, Navy & Civil Aeronautics Authority	M.D.'s	\$40-\$100	165	
Florida												
Jacksonville	Howard U. Sch. of Med.	Dean	Venereal Disease Control	3 months	Fall, Win- ter and Spring	Lectures, Clinics, Round Table Dis- cussions, Clin. Path. Confs., Ward Rounds	Medical School, hospital	Med. sch.	M.D.'s (having 1 yr. internship in appr. hosp.) ²	\$20	13	
Georgia												
Augusta	St. Med. Assn., St. Bd. of Health	Chairman, Med. P. G. Course Comm. (joint committee)	General and Special	1 week	June	Lectures, Clinics, Symposiums, Round Table Dis- cussions	Hospital	Med. sch.	Members of, and those certified by Co. Med. Soc.	\$5	127	Florida T. B. & Health Assn.
Idaho												
Boise	U. of Georgia Sch. of Med.	Dean	General Medicine and Surgery, Specialties	2 weeks	June	Lectures, Clinics, Demonstrations, Ward Rounds, Assignment of Patients, etc.	Hospital, out- patient depart- ment	Med. sch. and in state	Negro M.D.'s	No	21	
Illinois												
Chicago	St. Med. Assn.	Secretary	General Medicine and Surgery	5 days	August	Lectures, Clinics, Round Table Dis- cussions	Hospital	Med. sch. and in state	M.D.'s	\$10	275	None
	Children's Mem'l Hosp.	Chief of Staff	Pediatrics and Specialties	1 month	September	Lectures, Clinics, Demonstrations, Clin. Path. Confs.	Hospital	Med. sch.	M.D.'s	\$100	13	None
	Michael Reese Hosp.	Secretary, Grad. Teaching Comm.	Rorschach Method of Psychologic Interpretation, Electrocardiography	5 days and 2 weeks	July and August	Lectures, Clinics, Demonstrations, Round Table Dis- cussions	Hospital, out- patient depart- ment	Staff members with teaching positions	M.D.'s, psychol- ogists with clin- ical experience	\$35 and \$100	27	None
	Northwestern U. Med. Sch.	Dean	Physical Therapy, Medicine, G. U. Surgery, Ophthal- mology	4 weeks	September	Lectures, Demon- strations, Clinics, Ward Rounds	Medical School, hospital	Med. sch.	M.D.'s	\$50-\$300	33	

	St. Dept. of Public Health, U. of Illinois Coll. Med. U. of Chicago Sch. of Med.	Advisory Comm. of Obstetrics and Pediatrics	Obstetrics, Pediatrics	1, 2 and 6 weeks	Through-out year	Lectures, Clinics, Demonstrations, Round Table Discussions, Clin. Path. Confs.	Medical Schools, hospitals, outpatient departments	Med. sch.	M.D.'s	\$10-\$25	60	St. Med. Soc., Ill. Acad. of Ped., Federal funds
	U. of Chicago Sch. of Med.	Dean	Medicine, Gynecology	2 weeks to 3 months	Varies	Didactic and Clinical	Medical School, hospital outpatient department	Med. sch.	M.D.'s	\$100-\$150	22	.....
	U. of Illinois Coll. of Med.	Dean	Anatomy, Otolaryngology, Ophthalmology	1 week to 8 months	Through-out year	Lectures and Clinics	Medical College, hospital outpatient department	Med. sch.	M.D.'s	\$10-\$100	33	.....
Indiana	Indiana U. Sch. of Med.	Chairman, Dept. of E. N. T.	Ear, Nose and Throat	2 weeks	April	Lectures, Clinics, Symposiums, Demonstrations, Round Table Discussions, Clin. Path. Confs., Lab. Procedures	Medical School, hospitals, outpatient departments	Med. sch.	M.D.'s (giving special attention to E. N. T.)	\$150	25	None
		Chairman, Dept. of P. G. Educ.	Cardiology	1 week	June	Lectures, Clinics, Demonstrations, Round Table Discussions	Medical School, hospitals, outpatient departments	Med. sch., out of state	M.D.'s	\$35	20 (limited)	Federal funds
			General Medicine and Surgery	1 week	May	Lectures, Clinics, Symposiums, Demonstrations, Round Table Discussions, Clin. Path. Confs.	Medical School, hospitals, outpatient departments	Med. sch., in state and out of state	M.D.'s	No	475	Federal funds
	St. Bd. of Health, Indiana U. Sch. of Med., St. Med. Assn.	Chief, Bureau Mat. and Child Health, St. Bd. of Health	Obstetrics	2 weeks	Through-out year	Lectures, Clinics, Symposiums, Demonstrations, Round Table Discussions, Clin. Path. Confs., Movies	Medical School, hospitals, outpatient departments	Med. sch., in state and out of state	M.D.'s	No	15	Federal funds
Iowa	American Coll. of Physicians	Director, P. G. Course No. 5	Cardiovascular Diseases	1 week	March	Lectures, Clinics, Ward Rounds, Round Table Discussion, Clin. Path. Conf.	University hospitals	Med. sch.	M.D.'s	\$20	27	St. Univ. of Iowa Coll. of Med.
Kansas	St. Med. Soc.	Chairman, Comm. on Study of Heart Disease	Heart Disease	5 days	October	Lectures, Clinics	Hospitals	Med. sch.	M.D.'s (having training in this subject)	\$25	35	.....
Kentucky	U. of Kentucky	Head, Dept. of Hyg. and Public Health	Public Health and Allied Subjects	12 weeks	Summer	Lectures, Round Table Discussions, Field Work	Co. Health Depts.	Med. sch., in state and out of state	M.D.'s	\$100	30	St. Dept. of Health
Louisiana	Flint-Goedike Hosp. of Dillard U. Louisiana St. U. Grad. Sch. of Med.	Superintendent	General	2 weeks	June	Lectures, Clinics, Symposiums	Hospital	Med. sch.	Negro M.D.'s	\$5	37	National T. B. Assn. and Private
		Dean	Anatomy, Radiology, Public Health, Urology	2 weeks to 3 months	Through-out year	Didactic and Clinical	Medical School hospital outpatient department	Med. sch.	M.D.'s	\$25-\$150	20	None
	St. Bd. of Health, La. St. U. Med. Center, Tulane U. of La. Sch. of Med.	Director, Div. of Mat. and Ch. Health, St. Bd. of Health	Obstetrics, Pediatrics	2 weeks	Through-out year	Lectures, Clinics, Demonstrations, Ward Rounds	Medical Schools, hospitals, outpatient departments	Med. sch.	M.D.'s	Fees paid by St. Bd. at each course of Health	10 (limit at each course)	U. S. Children's Bureau
	St. Bd. of Health, La. St. U. Med. Center	Professor of Prev. Med., La. St. U.	Syphilology and Allied Subjects	4 and 6 weeks	Through-out year	Lectures, Clinics, Demonstrations, Seminars, Field Visits	Medical Center, hospitals, outpatient departments	Med. sch., in state and out of state	M.D.'s	No	23	U. S. Public Health Service
	Tulane U. of La. Sch. of Med., Dept. of Grad. Studies	Director	General (intensive instruction)	1 week	October	Lectures, Clinics, Symposiums, Clin. Path. Confs.	Medical School, hospital	Med. sch.	M.D.'s	\$5	51	.....
			Radiology, Anesthesia, Medicine, Surgery, Obstetrics, Gynecology	4 weeks	Through-out year	Didactic and Clinical	Medical School, hospital outpatient department	Med. sch.	Licensed physicians	\$100-\$300	121	.....

TABLE 1.—CONTINUATION COURSES FOR PRACTICING PHYSICIANS, 1939-1940—Continued
B. Where There Are Ample Facilities for Clinical Instruction—Five or More Days

Location of Course	Sponsoring Agencies	Director of Program	Subjects	Duration of Course	Time Given	Type of Instruction	Facilities for Graduate Programs	Instructors	Eligible for Admission	Registration Fee and/or Tuition	Appropriate No. of M.D.'s Attending	Additional Contributing Agencies and Funds
Maine Boston, Mass.	Bingham Associates Fund	Director	General and Special	2 weeks to 1 month	Throughout year	Lectures, Clinics, Symposiums, Clin. Path. Conf's.	New Eng. Med. Center, hospitals, medical school	Med. sch.	Co. and St. Med. Soc. members	Fees paid by Bingham Assoc.	48	Tufts Coll. Med. Sch.
Maryland Baltimore	Commonwealth Fund Johns Hopkins U. Sch. of Med.	Director, Extension Service Dean	Medicine, Obstetrics, Pediatrics, Office Surgery General and Special	1 month 6 months to 1 year	Varies Per arrangement	Lectures, Clinics, Bedside Teaching Clinical, Laboratory	Medical School, hospital Medical School, outpatient department	Med. sch. Med. sch.	M.D.'s (subject to approval) M.D.'s (acceptable to dept. heads)	Fees paid by Commonwealth Fund \$150-\$300	10 13	Harvard Med. Sch. None
Massachusetts Boston	Harvard Medical Sch. Courses for Graduates Tufts Coll. Med. Sch.	Assistant Dean Chairman, P. G. Division	Preclinical, General and Special General and Special	Varies 1 to 4 weeks	Throughout year Throughout year	Didactic and Clinical Lectures, Clinics, Symposiums, Demonstrations, Round Table Discussions, Clin. Path. Conf's.	Medical School, hospital, outpatient department Hospitals, outpatient department	Med. sch. Med. sch.	M.D.'s M.D.'s	\$15-\$300 \$5	600 103	..... Bingham Associates Fund
Cambridge	Mass. Institute of Technology	Dean of Science	Public Health and Allied Subjects	7½ weeks	Summer	Lectures, Demonstrations, Round Table Discussions, Field Trips	Health department	Staff members	M.D.'s, engineers bacteriologists, health educators	\$125	6	None
Michigan Ann Arbor	American Coll. of Physicians U. of Mich. Med. Sch., St. Med. Soc.	Director, P. G. Course No. 1 Chairman, Dept. P. G. Med.	General Medicine Preclinical, General and Special	2 weeks 1 to 8 weeks or longer	March Throughout year	Clinics, Demonstrations, Conferences Lectures, Clinics, Symposiums, Demonstrations, Clin. Path. Conf's.	Medical School, hospital Medical School, hospital	Med. sch. Med. sch., in state and out of state	M.D.'s M.D.'s	\$40 \$5-\$25	33 923	Univ. of Mich. Med. Sch. St. Dept. of Health, Wayne U. Coll. of Med., Rackham Fund, Kellogg Foundation
Detroit	American Coll. of Physicians Wayne Co. Med. Soc., Wayne U. Coll. of Med.	Director, P. G. Course No. 2 Chairman, Advisory Council	Medicine in Industry General Medicine, Specialties, Clinical Laboratory Procedures	1 week 1 day weekly, 10 times	March Fall and Winter	Lectures, Symposiums, Field Trips, Clin. Path. Conf's. Lectures, Clinics, Demonstrations, Bedside Teaching	Educational Bldg. Hospitals, outpatient department, Dept. of Hygiene Social	Med. sch., in state and out of state Med. sch. and in state	M.D.'s Co. and St. Med. Soc. members	\$20 No	38 240	Henry Ford Hosp.
Minnesota Minneapolis	Wayne U. Coll. of Med. U. of Minn. Center for Continuation Study	Dean Director, Dept. P. G. Med. Educ.	Anatomy, Pathology General	1 day weekly, 1 semester 6 days	Full Throughout year	Lectures, Laboratory Lectures, Clinics, Symposiums, Demonstrations, Round Table Discussions, Clin. Path. Conf's., Field Trips, Movies	Medical College Medical Center and affiliated hospitals	Med. coll. Med. sch., in state and out of state	M.D.'s Licensed Minn. M.D.'s; out of state Co. Med. Soc. members	\$25 \$25	90 318	..... St. Dept. of Health, St. Med. Assn., Commonwealth Fund, Minn. Hosp. Assn., Federal funds
Mississippi Sanatorium	Miss. St. T. B. Sanatorium	Superintendent	Diseases of Chest Internal Medicine, Chest Surgery	30 to 90 days	Summer	Clinics, Demonstrations, Round Table Discussions, Clin. Path. Conf's., Bed-side Teaching, X-Ray Conf's.	Hospital, outpatient department	Resident hospital staff	M.D.'s	No	...	.....
Missouri St. Louis	St. Louis U. Sch. of Med.	Dean	Medicine, Surgery, Obstetrics, Pediatrics	1 month	Summer or Fall	Lectures, Clinics, Symposiums	Hospital, outpatient department	Med. sch.	Negro M.D.'s (Med. Soc. members)	\$20	25	.....

TABLE 1.—CONTINUATION COURSES FOR PRACTICING PHYSICIANS, 1939-1940—Continued
B. Where There Are Ample Facilities for Clinical Instruction—Five or More Days

Location of Course	Sponsoring Agencies	Director of Program	Subjects	Duration of Course	Time Given	Type of Instruction	Facilities for Graduate Programs	Instructors	Eligible for Admission	Registration Fee and/or Tuition	Approximate No. of M.D.'s Attending	Additional Contributing Agencies and Funds
New York—Continued Rochester	U. of Rochester Sch. of Med.	Director, Summer Course in Ophthalmology	Ophthalmology	5 days	July	Lectures, Demonstrations, Clinics	Medical School, hospital	Med. sch., in state, out of state	Ophthalmic practitioners	\$40	...	None
Savanne Lake-Trudeau T. B.	Trudeau Sch. of Med.	Director	Tuberculosis	6 weeks	September, October	Lectures, Clinics, Symposia, Demonstrations, Round Table Discussions, Clin. Path. Confs., Quizzes	Hospitals, laboratories	Med. sch., in state	M.D.'s, 3d year med. students	\$100	30	Edw. L. Trudeau Foundation, Bellevue Hosp., N. Y. C., Lilla Babitt Hyde Foundation
North Carolina Chapel Hill	U. of North Carolina Grad. Sch.	Dean	Public Health	3-4 months	Fall	Lectures, Field Demonstrations, Laboratory Courses, Practical Field Work	Graduate School, local health units or Interstate sanitary district	Grad. Sch. Div. of Public Health, in state	Public health workers	No	14	U. S. Public Health Service
Salina	Southern Pediatric Seminars	Registrar	Pediatrics, Obstetrics	2 weeks	July	Lectures, Symposia, Round Table Discussions, Clin. Path. Confs., Clinics	Hospitals	Med. sch., in state, out of state	M.D.'s	\$25	84	.....
North Dakota Minneapolis	U. of Minnesota Center for Continuation Study, N. D. St. Dept. of Health	Director, P. G. Med. Educ. Center for Cont. Study, St. Health Officer	Obstetrics, Pediatrics, Venereal Diseases	1 week	Varies	Lectures, Demonstrations, Round Table Discussions	Center for Continuation Study, hospitals	Med. sch., in state, out of state	M.D.'s	No	72	Local medical societies, Federal funds
Ohio Cincinnati	U. Cincinnati Coll. of Med.	Dean	Otolaryngology	1 week	May	Anatomical Studies	Medical College, hospital	Med. coll.	Practicing otolaryngologists	\$60	24	None
Cleveland	American Coll. of Physicians	Executive Secretary	Internal Medicine and Allied Specialties	5 days	April	Lectures, Discussions, Demonstrations	Hospitals, outpatient departments, Public Auditorium	Med. sch., in state, out of state	Qualified physicians, medical students	None, \$12	1,021	.....
Columbus	American Coll. of Physicians	Director, P. G. Course No. 4	Survey of Hematologic Diseases	1 week	March	Lectures, Clinics, Informal and Clin. Path. Confs., Demonstrations, Round Table and General Discussions, Personal Patient Studies	St. Univ., hospital, laboratories	Med. coll., in state, out of state	M.D.'s	\$20	38	Ohio St. U. Coll. of Med.
Oklahoma Oklahoma City	St. Health Dept., U. of Oklahoma Sch. of Med.	Assoc. Prof. of Obs., Sch. of Med.	Obstetrics, Gynecology, Anatomy, Pediatrics, Urology	2 weeks	Varies	Lectures, Clinics, Symposia, Demonstrations, Round Table Discussions, Clin. Path. Confs., Home Deliveries	Medical School, hospital, outpatient department	Med. sch.	M.D.'s	\$25	4	U. S. Children's (limited) Bureau
Oregon Portland	Oregon Academy of Oph. and Otol.	Chairman, Comm. on Arrangements	Ophthalmology, Otolaryngology	1 week	April	Lectures, Clinics, Demonstrations, Round Table Discussions, Clin. Path. Confs., Movies	Medical School, hospitals, outpatient departments	Med. sch., in state, out of state	M.D.'s	\$25	80	Univ. of Oregon Med. Sch.
Pennsylvania Philadelphia	American Coll. of Surgeons Clinical Congress	Chairman, Administrative Board	Surgery and Surgical Specialties	5 days	October	Conferences, Clinics, Films, Clin. Demonstrations, Panel Discussions, Symposia	Hospitals	Med. sch., in state, out of state	Fellows A. C. S. and invited guests	\$2-\$10	2,600	5 medical schools and 40 hospitals in Philadelphia
Pennsylvania Harrisburg	Pennsylvania Hospital	Chief, Medical Service	Internal Medicine, Cardiology, Metabolism	1 to 3 weeks	June	Lectures, Clinics, Symposia, Round Table Discussions, Demonstrations, Clin. Path. Confs., Ward Rounds	Hospital, outpatient department, food clinic	Med. sch., in state	M.D.'s	\$35-\$100	24	None

	Philadelphia Co. Med. Soc.	Director, P. G. Institute	Cardiology, Vasculature, Venereal Diseases	5 days	March	Lectures	Hotel	Med. sch., in state	Co. or St. Med. Soc. members, senior medical students	\$5 (no charge to Phila. Co. Med. Soc. members)	1,981	None
	St. Dept. of Health	Director, Institute for Syphilis Control	Syphilis and Gonorrhea	1 to 3 weeks	.....	Lectures, Clinics, Syphilis, Demonstrations, Round Table Discussions	Hospital, outpatient department	Med. sch.	Co. or St. Med. Soc. members, public health physicians	No	50	None
	Temple U. Sch. of Med.	Dean	Broncho-esophagology	2 weeks	Through-out year	Clinical	Hospital, outpatient department	Med. sch.	M.D.'s	\$250	80	None
	U. of Pennsylvania Grad. Sch. of Med.	Dean	General and Special	2 to 32 weeks	Through-out year	Clinical	Medical School, hospitals, outpatient department	Grad. med. sch.	M.D.'s	\$25-\$800	30	None
South Carolina Charleston	Med. Coll. of the St. of South Carolina	Dean	Obstetrics, Pediatrics	2 weeks	Varies	Didactic and Clinical	Medical College, hospital, outpatient department	Med. sch.	M.D.'s	\$30	10	St. Board of Health
South Dakota Minneapolis, Minn.	U. of Minnesota Center for Continuation Study, S. D. St. Bd. of Health	Director, P. G. Med. Educ. Center for Continuation Study, Director, Div. Mat. & Ch. Health, St. Bd. of Health	Obstetrics, Pediatrics	10 days	Varies	Lectures, Demonstrations, Clinics, Discussions	Center for Continuation Study, U. Med. Sch. and hospitals	Med. sch.	M.D.'s	Fees paid by St. Bd. of Health	20	U. S. Children's Bureau
Tennessee Memphis	U. of Tennessee Coll. of Med.	Dean	Specific Techniques	Varies	On arrangement	Clinical	Medical College, outpatient departments	Med. sch.	M.D.'s	\$50-\$75	3 (limited)	None
Nashville	McHarry Med. Coll.	Dean	General Medicine	2 weeks	June	Didactic, Clinical, Laboratory	Medical College, hospital, outpatient department	Med. coll.	Negro M.D.'s	\$20	14	None
	Vanderbilt U. Sch. of Med.	Director, P. G. Instruction	General and Special	Varies	Through-out year	Didactic and Clinical	Medical School hospital, outpatient department	Med. sch.	M.D.'s	None to \$100	119	None
Texas Dallas and Galveston	St. Med. Assn., St. Dept. of Health	Secretary, St. Med. Assn.	Obstetrics, Pediatrics	4 weeks	May, June	Lectures, Clinics, Demonstrations, Round Table Discussions, Clin. Path. Conf.	Medical Schools, hospitals, outpatient department	Med. sch.	M.D.'s licensed to practice in Texas	No	40 (limited)	U. of Texas Faculty (limited) of Med., Galveston, to 20 at Baylor U. Coll. of each Med. Med., Dallas, Fed. Sch.) eral funds
Vermont Burlington	U. of Vermont Coll. of Med.	Dean	Ophthalmology	1 to 4 weeks	Varies	Lectures, Discussions, Clinics	Medical College, outpatient department	Med. coll., out of state	M.D.'s	\$50-\$100	12	None
Virginia Charlottesville	U. of Virginia Dept. of Int. Med., St. Med. Soc.	Exec. Secretary, Dept. of Clin. & Med. Educ., St. Med. Soc.	Recent Advances in Internal Medicine	1 week	June	Lectures, Clinics, Round Table Discussions, Ward Rounds, Demonstrations	Medical College, hospital, laboratories	Med. sch.	M.D.'s	\$15	18	.....
Richmond	Med. Coll. of Virginia	Dean	General Medicine	2 weeks	June	Didactic, Clinical	Medical College, hospital, outpatient department	Med. sch.	Negro M.D.'s	\$10	32	.....
Washington Seattle	U. of Washington Ext. Div., King Co. Hospital System, King Co. Med. Soc.	Director, Univ. Health Center	Preclinical, General and Special	1 week	July	Lectures, Clinics, Demonstrations, Clin. Path. Conf.	University laboratories, hospital, outpatient department	Med. sch., out of state, in state	M.D.'s	\$10	230 (average)	.....
Wisconsin Madison	U. of Wisconsin Med. Sch.	Dean	General and Special	1 to 6 months	Varies	Clinical	Medical School, hospitals, outpatient department	Med. sch.	M.D.'s	\$100 per month, \$400 per semester	4 (limited)	None

1. Courses accepted as part of the five year study requisite for certification by the American Board of Psychiatry and Neurology.

2. Negro students compose a majority of those in attendance.

3. Courses offered especially for Fellows of the College or for those preparing either to meet requirements for membership in the College or certification by the American Board of Internal Medicine.

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courses and graduate assemblies totaled 52,012. The individual registration of these groups in the order named was 20,213, 15,399 and 16,400.

4. Medicine, surgery, obstetrics, pediatrics and special subjects were included in the graduate instruction given. Instruction featuring clinical material included laboratory demonstrations, clinics, ward rounds, round table discussions, clinical pathologic and other conferences, symposiums and bedside teaching, as well as other practical clinical demonstrations.

5. Out of state instructors participated as frequently as physicians of the same state. Medical school faculties contributed half of the instructors to itinerant courses and conducted most of the instruction in which clinical material was featured over five or more days.

6. Registration fees were charged infrequently for itinerant courses but in no course did amounts exceed \$15. For graduate programs stressing clinical instruction at one center, fees ranged from \$5 to \$1,000.

FOUNDATIONS

Eight foundations contributed financial aid directly or indirectly for the support of postgraduate courses.

Bingham Associates Fund.—In 1937, through the generosity of William Bingham II, the New England Medical Center in Boston was created for rural physicians of New England to pursue postgraduate study at no expense. This fund makes possible fellowships for a month's work in general medicine with a stipend of \$250. Reports to date indicate that these opportunities have been taken advantage of only by Maine physicians, forty-eight having enrolled for the 1939-1940 courses.

Commonwealth Fund of New York.—The Commonwealth Fund gives assistance in extension medical education through grants-in-aid to specific projects and also offers fellowships to practicing physicians in connection with rural hospital and public health programs. Fellowships are provided in Boston hospitals for one month in medicine, pediatrics, obstetrics and office surgery. The stipend is \$250 plus tuition and travel expenses. It was reported that twenty-five men took advantage of these fellowships during 1939-1940. This fund provides similar opportunities for physicians in areas throughout the country where there is need for better medical facilities and a higher standard of medical practice.

Mayo Foundation for Medical Education and Research.—Neither the Mayo Clinic nor the Mayo Foundation offers short courses of any kind. However, lectures are concentrated in the fall and winter quarters with a few during the spring and are arranged in such a way that over a three year period a rather general survey of all fields in which training is offered is made by members of the staff. These lectures are planned to coordinate the basic sciences with the clinical fields and are open to visiting physicians. Also about twice a year a series of lectures and demonstrations in some one field is given for a period of one week. There is no charge for this and no arrangements need be made in advance.

W. K. Kellogg Foundation.—Fifteen courses were financed on a fellowship basis whereby the W. K. Kellogg Foundation contributed to physicians the cost of transportation, tuition and approximately \$25 a week for other expenses. The maximum contribution to any one physician on any course was \$150. During 1939-1940 such subjects as anemias, pneumonia, pediatrics, electrocardiography, ophthalmology, internal medicine, general surgery, x-ray diagnosis, otolaryngology and

gynecology were given during periods of from four days to seven weeks. These courses were conducted at the Universities of Michigan, Buffalo, Rochester, Tulane and Harvard and several other locations. Forty-seven physicians took advantage of these opportunities.

Other Foundations.—The Rockefeller Foundation, the Rackham Fund, the Rosenwald Fund, the Edward L. Trudeau Foundation and the Lillia Babbitt Hyde Foundation are organizations which have contributed financial aid, in amounts varying from approximately \$500 to \$45,000, directly to agencies such as medical schools, universities or associations for the purpose of sponsoring continuation study courses for practicing physicians.

OPPORTUNITIES FOR NEGRO PHYSICIANS

Alabama, the District of Columbia, Georgia, Louisiana, Missouri, Tennessee, Virginia, Florida, North Carolina, Pennsylvania and Texas offered courses for Negro physicians, details of which are referred to in tables 1-B, pages 714-719, and 2, pages 721-724. Organizations participating in these courses included state departments of health, medical schools, miscellaneous medical societies, hospitals, universities, federal agencies and private funds. Instruction was offered in medicine, surgery, obstetrics, pediatrics, tuberculosis, venereal diseases, diseases of nutrition, abdomen and chest. Courses varied in length from three days to three months, the majority being given in the spring or summer. Clinical instruction was given in all but one course. Attendance ranged from eleven to 204, the median being thirty-two. Fees were from \$5 to \$20 except in four instances, in which no fees were charged. Separate teaching centers have been established at Memphis and Nashville, Tenn., and clinics and courses given which are attended regularly. Postgraduate institutes for Negro physicians, sponsored by local Negro, medical and tuberculosis associations, were held last spring in St. Louis and Pittsburgh.

SCIENTIFIC ASSOCIATIONS

A total of 208 organizations holding scientific sessions of value to practicing physicians during 1939-1940 were noted. Not the least of these was the annual scientific program of the American Medical Association. Ninety-three of these agencies were national in origin, forty-five interstate, forty-nine district and twenty-one metropolitan. Methods of presentation included lectures, clinics, demonstrations, conferences, symposiums and discussions. The sessions varied in length from one to six days and covered all the specialties.

MISCELLANEOUS ACTIVITIES

In order to meet the individual needs of each state in providing continuation study for practicing physicians, medical and special societies, state departments and medical schools have attempted to provide different types of instruction in various states where it is not always possible for the practicing physician to attend organized courses such as those mentioned in the foregoing tables.

The Colorado State Medical Society has made an effort to bring opportunities in postgraduate study to its local physicians by sponsoring symposium programs on venereal disease, cancer control, tuberculosis control, and other subjects before component societies annually at the convenience of each component.

(Continued on page 724)

TABLE 2.—CLINICAL CONFERENCES, GRADUATE ASSEMBLIES AND STUDY COURSES, 1939-1940

Location of Course	Sponsoring Agencies	Director of Program	Subjects	Dura- tion of Course	Time Given	Type of Instruction	Facilities for Graduate Programs	Instructors	Eligible for Admission	Regis- Approximate tration No. M.D.'s tribut- Attending ing Agencies and Funds
Arkansas Little Rock	St. Med. Soc.	Chairman, Comm. on P. G. Instruction	General	2 days	January and October	Lectures, Clinics, Symposiums, Round Table Discussions	Hospital Out- patient Dept.	Med. sch. and out of state	M.D.'s	\$5 200 None
California Los Angeles and San Fran- cisco	Calif. Heart Assn.	Chairman, Local Program Comms.	Heart Disease	Varies	Varies	Lectures, Clinics, Symposiums, Dem- onstrations, Round Table Discussions, Clin. Path. Conf.	Hospitals, Medi- cal Schools	Med. sch. and in state	M.D.'s	\$2 (U.A.) 100 (S.F.) State and local \$15 (S.F.) T. B. assns.
San Fran- cisco	U. of Calif. Med. Sch.	Dean	Recently Acquired Knowledge Appli- cable in Practice, Chronic Diseases	3½ days	January and June	Lectures, Clinics, Symposiums, Dem- onstrations, Round Table Discussions, Clin. Path. Conf.	Hospitals, Hos- pital Outpatient Depts.	Med. sch.	M.D.'s	\$20 81 San Francisco Dept. of Health
Stockton	San Joaquin Co. Med. Soc.	Chairman, Comm. on P. G. Study	General	1 day weekly, 7 times	Fall	Lectures, Clinics, Symposiums	Hospitals, Lec- ture Rooms	Med. sch. and out of state	M.D.'s	\$5 65 None
Colorado Denver	St. Med. Soc., St. Health Dept.	Chairman, Comm. on P. G. Clinics and Dir., Div. Nat. & Child Health, St. Health Dept.	Obstetrics, Ped- iatrics, General Medicine and Surgery	3 days	Midwinter	Lectures, Clinics, Demonstrations, Round Table Dis- cussions	Hospitals and Hotels	Med. sch. and in state and out of state	M.D.'s	\$2 608 None
Grand Junc- tion	St. Med. Soc. and Men Co. Med. Soc.	Chairman, Western Slope Spring Clinics	General	2 days	Spring	Lectures, Discus- sions	Hotel	In state and out of state	M.D.'s	\$2 155 None
Pueblo	St. Med. Soc. and Pueblo Co. Med. Soc.	Chairman, Pueblo Spring Clinics Comm.	General	2 days	Spring	Lectures, Round Table Discussions	Hotel	In state and out of state	M.D.'s	\$2 72 None
Connecticut New Haven	St. Med. Soc.	Chairman, Comm. on Clinical Congress	General and Special	3 days	September	Lectures, Sympo- siums, Clinics, Discussions	Hospital and Med. Sch. Audi- toriums	Med. sch. in state and out of state	M.D.'s	\$2-\$3 631 Yale Univ. Sch. of Med.
District of Columbia Washington	Yale Univ. Sch. of Med. Med. Soc. of D. C.	Professor of Obs. and Gyn.	Obstetrics and Gynecology	Once monthly, 8 times	Fall, Winter and Spring	Lectures	Medical School	Med. sch. and in state and out of state	Co. and St. Med. Soc. members, Med. Students	No 60 None (average)
Florida Jacksonville	St. Med. Assn., St. Med. Soc., Med. Dent. & Pharm. Assn.	Chairman, Comm. on P. G. Educ.	Syphilology	1 day weekly, 2 times	January	Lectures, Clinics, Symposiums, Demonstrations	Co. Med. Soc. Bldg.	Med. sch. and in state and out of state	M.D.'s	\$2-\$3 170 None
Georgia Atlanta	Fulton Co. Med. Soc.	Chairman, Atlanta Grad. Med. Assembly	Medicine, Surgery, Biochemistry	4 days	January	Lectures, Round Table Discussions	Hotel	Out of state, med sch.	Negro M.D.'s	No 38 U. S. Public Health Service, U. S. Child. Bur., Julius Rosen- wald Fund, Florida T. B. & Health Assn.
Indiana Evansville	St. Med. Assn. and Vanderburgh Co. Med. Soc.	Chairman, Comm. on Med. Educ. & Hospis., P. G. Course Comm. St. Med. Assn.	Special branch of Medicine or Surgery each month	Once monthly	Through- out year	Lectures, Clinics	Hospital	In state and out of state	Co. and St. Med. Soc. members	No 43 None (average)
Indianapolis	Indiana Univ. Sch. of Med.	Chairman, Dept. of P. G. Educ.	Pediatrics	1 day weekly, 4 times	Spring	Lectures, Clinical Discussions, Case Presentations	Medical school, Hospitals	Med. sch., in state and out of state	M.D.'s	\$10 10 Federal funds
Marion	St. Med. Assn. and Grant Co. Med. Soc.	Chairman, Comm. on Med. Educ. & Hospis., St. Med. Assn.	Special branch of Medicine or Surgery each month	Once monthly	Through- out year	Lectures, Clinics	Hospital	In state and out of state	Co. and St. Med. Soc. members	No 43 None (average)
Terre Haute	St. Med. Assn. and Vigo Co. Med. Soc.	Chairman, Comm. on Med. Educ. & Hospis., St. Med. Assn.	Special branch of Medicine or Surgery each month	Once monthly	Through- out year	Lectures, Clinics	Hospital	In state and out of state	Co. and St. Med. Soc. members	No 43 None (average)

TABLE 2.—CLINICAL CONFERENCES, GRADUATE ASSEMBLIES AND STUDY COURSES, 1939-1940—Continued

Location of Course	Sponsoring Agencies	Director of Program	Subjects	Duration of Course	Time Given	Type of Instruction	Facilities for Graduate Programs	Instructors	Eligible for Admission	Regis. Approximate Additional Contribution N. M. D.'s tributating Agencies Fee Attending and Funds
Iowa										
Iowa City	St. Hygiene Lab., St. Dept. of Health	Director, St. Hygiene Lab.	Pneumonia Typing	3 days (repeated)	Fall	Lectures, Laboratory Instruction	St. Hygiene Lab., Lab. of Dept. of Public Health, St. Univ.	Med. sch. and St. Dept. of Health	M.D.'s and Lab. Technicians	No
Kansas										
Lawrence	U. of Kansas Sch. of Med.	Dean	General	4 days	Spring	Clinics	Hospital Out-patient Dept.	Med. sch.	M.D.'s	No
Kentucky										
Louisville	Jefferson Co. Med. Soc.	Chairman, Program Comm.	Hematology, Vitamins	Twice monthly, 10 months	Through-out year	Lectures	Hospital	Med. sch.	M.D.'s	No
Louisiana										
Lafayette	Louisiana St. U. Grad. Sch. of Med. and Ext. Div.	Chairman, Comm. on P. G. Course in Dis. of Child.	Pediatrics	1 day weekly, 10 times	Spring	Lectures, Clinics, Demonstrations, Round Table Disc.	Hospital	Med. sch.	M.D.'s	\$5
New Orleans										
New Orleans	New Orleans Grad. Med. Assembly	Dean, Grad. Sch. of Med.	General	2 days	March	Lectures, Discussions	Hospital	Med. sch.	Co. and St. Med. Soc. members	\$1
Maine										
Waterville	St. Med. Assn.	President	General	4 days	February	Lectures, Clinics, Demonstrations, Round Table Disc., Clin. Path. Confs.	Hotel	Med. sch. and out of state	M.D.'s	\$10
Massachusetts										
Cumbridge	St. Med. Assn. of Mass., N. H., R. I., Me. and Vt.	Chairman, Comm. on Grad. Educ.	General	2 days	October	Lectures, Clinics, Panel Discussions	Hospitals, Hotel	In state and out of state	Co. and St. Med. Soc. members	...
Michigan										
Detroit	Wayne Co. Med. Soc., Detroit Dept. of Health	Administrative Officers	Preventive Medicine	Once weekly, 6 times	Fall and Spring	Lectures	Theater	Med. sch. and out of state	Licensed physicians	\$3
Minnesota										
Minneapolis	St. Dept. of Health, St. Med. Assn., Univ. of Minn. Med. Sch.	Executive Officer, St. Dept. of Health	Obstetrics, Pediatrics	3 days	Spring	Lectures, Clinics, Symposia, Demonstrations, Round Table Discussions	Hospitals, U. of Minn. Center for Continuation Study	Med. sch.	M.D.'s	No
Missouri										
Kansas City	Kansas City S. W. Clin. Soc.	Director of Clinics	General	2 days (Spring) 4 days (Fall)	Spring and Fall	Lectures, Round Table Discussions	Hospital, Auditorium	Med. sch., in state and out of state	M.D.'s, Med. Students	No (Sp.) \$5 (F.)
St. Joseph										
St. Joseph	St. Joseph Clin. Soc.	1st Vice-President	General Medicine and Surgery	3 days	Spring	Lectures, Clinics, Demonstrations, Round Table Disc., Clin. Path. Confs.	Hospitals	In state and out of state	M.D.'s	No
St. Louis										
St. Louis	St. Louis Clinics	President	General	4 days	May	Lectures, Clinics, Demonstrations, Round Table Disc., Clin. Path. Confs.	Hospitals	Med. sch. and in state	M.D.'s	\$10
New Jersey										
Jersey City	St. Med. Soc.	General Chairman, Fall Clin. Conf.	General	2 days	November	Lectures, Clinics, Demonstrations, Round Table Disc., Clin. Path. Confs.	Hospitals	In state	M.D.'s	No
Orange										
Orange	St. Health Dept.	Chief, Div. of V. D. Control	Syphilis	1 day weekly, 6 times	October and November	Lectures, Clinics, Demonstrations	Hospital, Univ. of Pa. Med. Sch., Phila.	Out of state, med. sch. and in state	New Jersey licensed M.D.'s	No

New York Albany	St. Dept. of Health, Albany Med. Coll.	Director, Div. of Comm. Dis., St. Dept. of Health	Public Health	2 days plus 11 field trips	Through- out year	Clinics, Demonstra- tions, Round Table Discussions, Confer- ences, Field Trips	Hospitals, Lab- oratories	Med. sch., health officers and lab. directors	Licensed physi- cians	\$30	95	None
New York City	American Cong. of Physical Therapy	Executive Director	Physical Thera- peutics	4 days	August- September	Lectures, Clinics, Symposiums, Dem- onstrations, Round Table Discussions	Hospitals, Outpatient Departments	Med. sch. in state and out of state	M.D.'s and Phys. Ther. Technicians	\$25	50	None
	N. Y. O. Dept. of Health, Pneumonia Control Div.	Asst. Director, Bureau of Labs.	Pneumonia Therapy	1 session, 11 times	March and April	Lectures	Auditoriums	Med. sch.	Members of organ- izations request- ing programs	No	1,015	None
	Queens Co. Med. Soc.	Chairman, P. G. Educ. Comm.	General	Varies	Varies	Lectures, Round Table Discussions, Olin. Path. Confis.	Hospital, Outpatient Department	Med. sch.	M.D.'s	No	953	None
	Tuberculosis Sanat. Conf. of Metro. N. Y.	Chairman, Clinical Section	Chronic Pulmo- nary Diseases	4 sessions a year	Oct., Dec., Feb., Apr.	Lectures, Sympo- siums, X-Ray Pre- sentations	Hospital, Med. Coll.	Med. sch. in state and out of state	M.D.'s	No	900	New York T. B. and Health Assn., local T. B. assns.
Syracuse	St. Med. Soc.	Chairman, Council Comm. on Public Health & Educ.	Nutrition and Diet	1 day weekly, 4 times	October and November	Lectures, Demon- strations	Med. Coll., Hos- pital	In state	M.D.'s, Dietitians, etc.	No	103	St. Health Dept., N. Y. Dietetic Assn., Syracuse Univ. Coll. of Med.
	Onondaga Co. Med. Soc.	Chairman, Med. Educ. Comm.	Clinical Path- ology	1 day weekly, 6 times	Varies	Lectures, Demon- strations, Round Table Discussions, Olin. Path. Confis., Symposiums	Hospitals, Outpatient Departments	Med. sch., in state and out of state	M.D.'s, Med. Students	\$5-\$10	30	St. Med. Soc. and St. Dept. of Health
North Carolina Durham	St. Dept. of Publ. Hlth., Div. of Coop. Hlth., Educ. and Race Relations	Secretary, Subcomm. for Negro Health and Educ.	Clinical Medicine and Surgery	3 days	October	Lectures, Clinics, Symposiums	Hospital	Med. sch.	Negro M.D.'s	\$5	...	Duke Univ., Univ. of N. C.
Ohio Cleveland	Western Reserve Univ. Sch. of Med., City Hospital	Chairman, Comm. on Programs, Publi- cations and Educ.	Practical Reviews of Special Subjects	11 lec- tures	October	Lectures, Demon- strations, Discus- sions	Hospital	Med. sch.	M.D.'s	No	94	None
Oklahoma Oklahoma City	Oklahoma City Clin. Soc.	Director of Clinics	General Medicine	4 days	Fall	Lectures, Sympo- siums, Round Table Discussions	Lecture Rooms	Med. sch. in state and out of state	M.D.'s	\$10	547	None
Pennsylvania Philadelphia	Mercy Hospital	Director, P. G. Comm.	Diseases of Nutri- tion, Abdomen and Chest	3 days	May	Lectures	Hospital	Med. sch., in state and out of state	Negro M.D.'s	No	70	None
Pittsburgh	Allegheny Co. Med. Soc.	Chairman, Grad. Educ. Comm.	General	1 day weekly, 4 to 6 times	Spring and Fall	Lectures, Clinics, Demonstrations, Round Table Disc.	Hospitals, Outpatient Departments	Med. sch. and In state	M.D.'s	\$10-\$30	59	.....
Rhode Island Providence	St. Dept. of Health	Chief, Div. of Mat. and Child Health	Obstetrics	1 day weekly, 5 times	February and March	Lectures, Demon- strations, Movies	Hospital	In state	M.D.'s	No	75	None
South Carolina Anderson	Anderson Co. Med. Soc.	President, Piedmont P. G. Clin. Assembly	General Medicine and Surgery	3 days	September	Lectures, Clinics, Round Table Disc.	Hospital	Med. sch.	Licensed physicians	\$3	100	None
South Dakota Watertown	St. Med. Assn.	Secretary	General	3 days	May	Lectures, Round Table Discussions, Movies	Hotel	Med. sch., in state and out of state	Co. and St. Med. Soc. members	No	...	St. Bd. of Health, U. S. Public Health Service
Tennessee Knoxville	Knox Co. Med. Soc.	Secretary, Tenn. Valley P. G. Med. Assembly	General	3 days	June	Lectures, Demon- strations, Round Table Discussions	Hotel	Med. sch. and out of state	M.D.'s	\$4	375	None
Memphis	Mid-South P. G. Med. Assembly	Secretary	General Medicine	4 days	February	Lectures, Round Table Discussions	Hotel	Med. sch., in state and out of state	M.D.'s, Sr. and Jr. Med. Students	\$5	750	None
Texas Dallas	Dallas Southern Clin. Soc.	Director of Clinics	General	4 days	March	Lectures, Clinics, Symposiums, Demonstrations, Round Table Disc., Clin. Path. Confis.	Hotel and Hospital	Med. sch., in state and out of state	M.D.'s, Interns, Sr. Med. Students	\$10	674	None
Houston	P. G. Med. Assembly of S. Texas	Secretary	Medical Specialties	3-4 days	December	Lectures, Round Table Discussions	Hotel	Med. sch. and out of state	M.D.'s, Interns, Med. Students	\$10	700	None

individual basis and he worked with approximately ninety physicians. The pediatrician gave discussions before medical society groups and hospital staff meetings and gave individual consultations on request.

In Virginia the state medical society and the state department of health annually sponsor chest x-ray conferences at medical society meetings.

PRINCIPLES REGARDING GRADUATE MEDICAL SCHOOLS

Approved by the House of Delegates of the American Medical Association, June 1923

(Revised June 11, 1940)

I. Organization

A graduate medical school should be incorporated as a non-profit institution. Its board of trustees should be composed of public spirited men or women having no financial interest in the operations of the school or its associated hospitals. The trustees should serve for fairly long and overlapping terms. If the choice of trustees is vested in any other body than the board itself, that should be clearly stated. Officers and faculty of the school should be appointed by the board.

II. Administration

There should be careful and intelligent supervision of the school by a dean or other executive officer who holds and has sufficient authority to carry out the ideals of present day graduate medical education.

The graduate school shall maintain a full and accurate record of each student's qualifications:

- (a) medical degree and licensure,
- (b) internship or equivalent training,
- (c) residency or equivalent training,
- (d) attendance in school,
- (e) proficiency as appraised by
 - (1) medical contributions,
 - (2) research,
 - (3) membership in county medical society or other scientific bodies,
 - (4) examination,
 - (5) qualifying opinion by student's teachers.

In the case of study for a specialty, a full record of the prescribed course and duration of study with attendance and final estimate of proficiency should be made.

The graduate school should publish an annual announcement and bulletins or catalogues giving detailed information in regard to its courses of instruction, its teachers and details of the laboratories, dispensaries and hospital patients. It should outline the various opportunities for study offered in both fundamental and clinical branches and a list of those to whom advanced degrees or certificates were granted.

III. Faculty

The graduate medical school should have a faculty well trained in and responsible for instruction in all subjects in which courses for study are announced, including the essential review and advanced work in the preclinical sciences. This faculty should be organized under competent department heads.

IV. Laboratories

The school should possess well equipped laboratories. The postmortem rate shall be in conformity to the rules for approved hospitals.

V. Clinical Facilities

The graduate medical school should have control of a teaching hospital with adequate outpatient clinic. It should have sufficient material to enable it to provide satisfactory clinical study in the fields of medicine in which courses are offered, so that students may personally examine patients in the hospital wards and in the dispensary and make the essential laboratory examinations.

The sum of approximately \$2,500 was budgeted by the Wyoming State Department of Health for post-graduate instruction. This service provides speakers for local medical society scientific programs in obstetrics, pediatrics and orthopedics. The funds for financing this instruction were made available through the Social Security Board.

VI. Library

The graduate school should have a medical library under the supervision of a competent librarian and staff. It should include text and reference books, and bound medical periodicals and the essential indexes. For any library, the *Quarterly Cumulative Index Medicus* is essential. It should receive regularly the more important medical periodicals, the latest numbers of which are easily accessible.

The school should maintain adequate museum facilities, especially in anatomy and pathology.

VII. Resources

Experience has shown that it is not possible to maintain high educational standards on income from student fees alone. Other sources of financial support are deemed essential for the proper conduct of graduate medical schools and should be listed in the annual announcement.

VIII. Requirements for Admission

(a) A physician who does not intend to limit his practice to a specialty shall present satisfactory evidence that he is a graduate of a medical school and that he is licensed to practice in the state in which he resides.

(b) The physician who desires to prepare himself to specialize, or who has limited his practice to a specialty, shall present satisfactory evidence that he is a graduate of a medical school approved by the Council on Medical Education and Hospitals and that he has completed at least one year's internship in a hospital approved by the Council or the equivalent.

IX. Curriculum

The graduate school should have its various courses designed to prepare the physician for the practice of a specialty so graded that the student, if he desires, may follow a progressive and systematic program of two or more years' duration. If at some previous time, or in other institutions, the student has satisfactorily completed certain portions of the work, he may be given credit for the same, with a proportional advanced standing. Institutions offering courses leading to restricted practice in a specialty should provide:

- (a) courses in anatomy, pathology, chemistry and the other basic preclinical sciences which apply to the respective specialties;
- (b) clinics in which students personally examine patients in hospital wards and outpatient departments and follow these patients throughout their illness;
- (c) courses of operative and laboratory—cadaver—technic appropriate to each specialty, and
- (d) for those especially qualified, opportunity for research work with proper critical supervision should be provided.

Short operative courses offered in any of the clinical specialties should include a full review with diagnostic and clinical courses so arranged that they become integral parts of a complete program.

X. Advanced Degrees and Certificates

No advanced degree or certificate should be granted to any one who has not demonstrated by examination or otherwise proficiency in his specialty, nor to any one who has not completed at least one academic year in full time study in the institution granting the certificate.

APPROVED EXAMINING BOARDS IN MEDICAL SPECIALTIES

The announcements of approved examining boards in medical specialties are reproduced herewith.

AMERICAN BOARD OF ANESTHESIOLOGY, Inc. AN AFFILIATE OF THE AMERICAN BOARD OF SURGERY

RALPH M. WATERS, President, Madison, Wis.
HENRY S. RUTH, Vice President (Liaison Officer to the American Board of Surgery), Merion, Pa.
PAUL M. WOOD, Secretary-Treasurer, 745 Fifth Avenue, New York.
JOHN S. LUNDY, Rochester, Minn.
E. A. ROVENSTINE, New York.
H. BOYD STEWART, Tulsa, Okla.
RALPH M. TOVELL, Hartford, Conn.
PHILIP D. WOODBRIDGE, Boston.
CHARLES F. MCCUSKEY, Glendale, Calif.

HISTORY

The plan for this organization was devised to conform with those of other examining boards in medical specialties, by a committee representing the American Society of Anesthetists, Inc., the American Society of Regional Anesthesia, Inc., and the Section on Surgery of the American Medical Association. These organizations adopted the tentative plans submitted, and the formation of the American Board of Anesthesiology, Inc., an affiliate of the American Board of Surgery, Inc., was completed on June 2, 1937. The Advisory Board for Medical Specialties, and the Council on Medical Education and Hospitals of the American Medical Association approved the affiliation in 1938. Diplomates of this Board will be designated "A.B. 13" in the Directory and Biographical Departments of the American Medical Association.

PERSONNEL

The members of the examining board were elected by the American Society of Regional Anesthesia, Inc., the American Society of Anesthetists, Inc., and the Section on Surgery of the American Medical Association. Each cooperating society has three representatives, thus giving national and regional representation in the composition of the board.

The term of membership is for six years. Each cooperating association has the appointing power of its representatives subject to the approval of the board.

PURPOSES

1. To establish criteria of fitness to be designated a specialist in the practice of anesthesiology.
2. To improve educational facilities and practice in medical schools and hospitals, and furnish lists of these, together with lists of individual instructors who give adequate instruction and training in anesthesiology.
3. To arrange, control, and conduct examinations to determine the qualifications, and grant a certificate to those who voluntarily apply and meet the required standards. Such certification will serve to provide the public and the professions with the opportunity to select the best available service.

(Conferring of degrees is a prerogative of the universities, and the Board of Anesthesiology makes no attempt to grant degrees, regulate or control the practice of anesthesiology in any way whatsoever, by license or restriction.)

QUALIFICATIONS FOR ELIGIBILITY TO CERTIFICATION

A. *General*.—1. An applicant's moral and ethical standing in the profession must be satisfactory to the entire board. The board must be assured that the applicant is engaged in the practice of anesthesiology as a specialty and that he intends to continue to be so engaged.

2. Membership is required in the American Medical Association or membership in such other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association. Membership in other societies shall not be required.

3. Practice must be limited to anesthesiology, in accordance with the requirements of the American Board of Surgery.

4. In exceptional instances the board may, in its discretion, accept for examination candidates who have met all the preliminary requirements and have clearly demonstrated their identity as an anesthetist over a period of years but whose formal training does not comply with the full requirements to be exacted in the future.

B. *Professional Standing*.—1. An applicant must be a graduate of a grade A school in the United States or Canada recognized by the Council on Medical Education and Hospitals of the American Medical Association, or a graduate of an approved foreign school.

2. Satisfactory evidence must be supplied of completion of an internship of not less than one year in a hospital approved by the same council, or its equivalent in the opinion of the board.

3. An applicant must establish in a manner satisfactory to the Board of Anesthesiology: that he is a physician duly licensed by law to practice medicine; that he is of high ethical and professional standing, and that he has received adequate special training in anesthesiology.

C. *Special Training and Practice*.—1. Before certification the candidate must have had an active experience limited to anesthesiology of not less than four calendar years. Applicants accepted after Jan. 1, 1941, will be required to have an active experience of five years.

2. The board recommends the inclusion of at least two years of carefully supervised instruction in the clinical phases of anesthesiology in hospital clinics, dispensaries, and diagnostic laboratories recognized by the Council on Medical Education and Hospitals of the American Medical Association as competent in the teaching and practice of anesthesiology. In addition, instruction in anatomy, physiology, pharmacology, biochemistry and other basic sciences which are necessary to the proper understanding of the problems involved in the specialty of anesthesiology is required.

(The board believes that for those entering the specialty after Jan. 1, 1942, the facilities for special training in anesthesiology will be increased and such training will be sufficiently standardized that special training in anesthesiology may be interpreted to include after that date:

(a) A period of study, after the internship, of not less than three years in clinics, dispensaries, hospitals, and laboratories recognized by the Council on Medical Education and Hospitals of the American Medical Association as competent to provide a satisfactory training in the special field of anesthesiology.

(b) A total period of not less than six years of special training and practice in anesthesiology after internship will be required before certification can be granted.)

EXAMINATIONS

The qualifying examination will be divided into Part I, written, Part II, oral, and Part III, practical.

PART I

1. An applicant, to be eligible for Part I, must meet all requirements and be certified by the central office of the board after his credentials have been approved by the secretary of the board, who shall have recourse to the Examination Committee in doubtful cases.

2. At the board's discretion a candidate may apply for the written examination on basic science and clinical practice on the completion of his courses of special training in these subjects.

3. Part I may be given simultaneously in several centers, throughout the United States, which the board may determine suitable for the purpose.

PART II

1. In order to be eligible for Part II, a candidate must have successfully passed Part I in addition to having met the necessary requirements and having presented definite evidence of an adequate experience in anesthesiology satisfactory to the board.

2. It is probable that Part II examinations will be held at the same time and place as the examinations of the American Board of Surgery. Later, however, as the demand grows, it may be necessary to establish subsidiary centers where this part may be held. At that time it will be necessary for the board to appoint subsidiary boards, consisting of those already qualified to actually conduct such examinations.

PART III

1. It is believed that the practical examination in this field is slightly different from that in most specialties. The examiners would be expected to observe the work of candidates in their own or similar operating room surroundings, their relations to other staff members, and investigate their professional standing.

CONDUCT OF EXAMINATION

Carefully conducted and thorough examinations will be required of candidates. The aim will be to avoid unduly exacting standards above present facilities for study and practice in anesthesiology, and on the other hand, to prevent laxity, which would nullify the main purpose of the certificate. Thus the type of the examination will depend on a careful review of the work done, years of practice, special courses of study, and professional standing of the applicant.

Written examinations will cover such topics as anatomy, biochemistry, physiology, pharmacology, pathology, physical diagnosis, therapeutics, clinical practice, and public health in relation to anesthesiology.

Oral examinations will cover topics in the above list, and such questions on physics and mechanics as are important in anesthesiology, especially dealing with electrical theories and the proper handling of high pressure gases and flammable agents.

Practical demonstrations will be required of the use of various types of apparatus and technics. Cadavers may be utilized by the candidates to demonstrate anatomical landmarks and technics important in regional anesthesia and for therapeutic and diagnostic procedures. Candidates should also be prepared to demonstrate methods of artificial respiration, and intravenous and pneumotherapy.

GRADES

A candidate must receive a passing average for each part, to be entitled to certification. No candidate shall pass a part who does not receive a grade of 60 per cent or more in each subject of such part. An average grade of 75 per cent shall be required for passing.

A candidate who fails in his examination in Part I will have his papers reviewed by the entire board and will be entitled to reexamination at yearly intervals for two consecutive years without further payment of fee. The board may, however, for sufficient reason, deny a candidate the privilege of reexamination.

FEES

The fee shall be \$75, \$25 of which must accompany application. Filing fee of \$10 included in this first payment is not returnable in case of rejection of application.

This board is a nonprofit organization, all fees to be used to extend the existing facilities for training in anesthesiology, after deducting necessary expenses for maintenance of the office, and the conducting of examinations. The board reserves the right to increase the fee when found necessary.

REVOCATION OF CERTIFICATE

All certificates issued by the board shall be subject to revocation by the board at any time, in case it shall determine in its sole judgment that a candidate who has received a certificate either was not properly qualified to receive it or has become disqualified since its receipt.

ADDITIONAL INFORMATION

Every candidate applying for certification must personally appear before the board before being certified.

Application blanks may be secured through the Secretary of the American Board of Anesthesiology. They must be completely filled out, accompanied by the other required credentials, and filed with the secretary of the board at least sixty days prior to the date of examination. Application blanks contain the following statement:

"I hereby make application to the American Board of Anesthesiology, Inc., an affiliate of the American Board of Surgery, for the issuance to me of a Certificate of Qualification as a Specialist in Anesthesiology and for examination relative thereto, all in accordance with and subject to its rules and regulations. I agree to disqualification from examination or from the issuance of a Certificate of Qualification or to forfeiture and redelivery of such certification in the event that any of the statements hereinafter made by me are false or in the event that any of the rules governing such examinations are violated by me or in the event that I did not comply with or shall violate any of the provisions of the Certificate of Incorporation or By-Laws of the American Board of Anesthesiology, Inc., an affiliate of the American Board of Surgery, or both, as then constituted. I agree to hold the American Board of Anesthesiology, Inc., an affiliate of the American Board of Surgery, its members, examiners, officers and agents free from any damage or complaint by reason of any action they, or any of them, may take in connection with this application, such examination, the grade or grades given with respect to any examination, or the failure of said board or corporation to issue to me such Certification of Qualification."

Proper forms for making application and other information will be furnished by the secretary-treasurer.

AMERICAN BOARD OF DERMATOLOGY
AND SYPHILOLOGY

HOWARD FOX, President, New York.

HAROLD N. COLE, Vice President, Cleveland.

C. GUY LANE, Secretary-Treasurer, 416 Marlboro Street, Boston.

CHARLES C. DENNIE, Kansas City, Mo.

J. GARDNER HOPKINS, New York.

PAUL A. O'LEARY, Rochester, Minn.

FRANCIS E. SENEAR, Chicago.

ARTHUR W. STILLIANS, Chicago.

FREDERICK D. WEIDMAN, Philadelphia.

ORGANIZATION

At the 1931 meeting of the American Dermatological Association, a committee was appointed to determine the advisability of forming an American Board for the certification of competent practitioners in this specialty similar to boards created by the ophthalmologists, the otolaryngologists and by the obstetricians and gynecologists. A similar committee was appointed by the Section on Dermatology and Syphilology of the American Medical Association at its meeting in the same year. A favorable report was rendered by each committee at the 1932 meeting of each of the above organizations.

The American Dermatological Association voted to accept the report of this committee, and the president appointed the following four members to represent the Association on the newly formed American Board of Dermatology and Syphilology:

Dr. Jay F. Schamberg, Philadelphia.

Dr. Howard Fox, New York.

Dr. Harold N. Cole, Cleveland.

Dr. Arthur W. Stillians, Chicago.

The Section on Dermatology and Syphilology of the American Medical Association also accepted the report of its committee and the chairman appointed the following members to serve as its representatives:

Dr. Howard Morrow, San Francisco.

Dr. William H. Mook, St. Louis.

Dr. George M. MacKee, New York.

Dr. C. Guy Lane, Boston.

The first meeting of the board was held in New Orleans on May 11, 1932, at which time officers were elected.

Another meeting was held on Nov. 11, 1932, in Philadelphia at which the organization was completed and resolutions were adopted concerning the proper procedure to be followed by the board. On Nov. 29, 1932, the board was incorporated under the laws of the state of Delaware.

In 1937 the American Academy of Dermatology and Syphilology was formed, and in November 1939 a plan was finally approved whereby the board would be composed of three representatives from each national dermatologic society, viz., the American Dermatological Association, the Section on Dermatology and Syphilology of the American Medical Association, and the American Academy of Dermatology and Syphilology.

PURPOSES

The board has been established primarily to determine the competence of physicians who specialize in dermatology and syphilology. It will prescribe adequate standards of fitness, conduct examinations to test the qualifications of voluntary candidates and grant certificates to candidates who successfully fulfil the requirements of the board.

A second object is to publish lists of physicians, who shall have been certified by the board, for the benefit of hospitals, medical schools, other physicians and the lay public.

A third object is to improve the standards of practice of dermatology and syphilology (1) by investigation of medical school curriculums and (2) by investigation and encouragement of adequate facilities for graduate instruction in this specialty.

CERTIFICATES

A certificate will be issued to each candidate who meets the requirements of the board, to the effect that the holder of the certificate has had adequate training in dermatology and syphilology and has successfully fulfilled the requirements of the board.

It is expected that medical schools, hospitals and physicians, as well as the lay public, will utilize the certificate from this board as a proof of adequate preparation in the field of dermatology and syphilology, and of fitness of candidates for positions under their control. For this purpose lists of those holding certificates from the board will be available for inspection and

will be published from time to time by the board. Diplomates will be identified in the Directory of the American Medical Association and the Directory of Medical Specialists.

A certificate granted by this board does not of itself confer or purport to confer, any degree, or legal qualifications, privileges, or license to practice dermatology or syphilology. The board does not intend to limit or interfere with the professional activity of any duly licensed physician. Its aim is to elevate the standard of qualification for specialists in this field and to certify as specialists those who voluntarily comply with the requirements of the board.

Certificates will be issued only to physicians in the United States and its possessions, in Canada and in Cuba.

APPLICATION AND FEE

The board desires to appraise the candidate's educational opportunities (premedical, medical and dermatologic), the character of the men under whom he has worked, his hospital and teaching positions, original investigations, contributions to dermatologic literature, membership in medical societies and his local and general reputation.

For this purpose, application must be made on a special blank, which may be obtained from the secretary. No application will be considered unless made on the regular application blank. This application should be forwarded at least two months before the date of examination together with the required reprints, photographs and the fee of \$35. This fee will not be returned, and no application will be considered until the fee is received. This fee has been carefully computed and is used entirely for administrative purposes. Members of the board do not receive any compensation except for actual expenses connected with holding the examinations.

Make checks payable to American Board of Dermatology and Syphilology, Inc.

EXAMINATIONS

Applicants classified in group B will be required to pass a written examination. This written examination on clinical and laboratory subjects including cutaneous pathology will be held simultaneously at stated intervals in different parts of the country, approximately two months before the oral examination.

Applicants classified in both groups A and B will be required to pass an oral, clinical and laboratory examination. This examination will be conducted in a clinic or hospital ward where individual cases will be discussed with each candidate. The examination will include various basic subjects as related to the skin: histopathology, mycology, allergy and physics of physical therapy, etc.

The oral examination will be held near the time and place of the annual meeting of the American Academy of Dermatology and Syphilology. This examination will be held only at the time of regular meetings of the board.

Examinations are designed to test the candidate's fitness to practice dermatology and syphilology as a specialty. The board will endeavor to adapt this examination to the candidate's experience and years of practice. It will try especially to ascertain the breadth of his clinical experience, his knowledge of recent literature of dermatology and syphilology and his general qualifications as a specialist in this branch of medicine.

Except in special circumstances, applicants shall take the examination within the year following the filing of application and the deposit of the fee.

Whenever an applicant fails to pass the examination, the board if requested will make suggestions as to suitable courses of instruction for the purpose of overcoming deficiencies in his knowledge of the specialty.

REEXAMINATIONS

If the candidate fails or is "conditioned" in an examination he will be admitted to a second examination after one year, but within three years, and must give sixty days' notice of his intention to appear for reexamination. If a candidate who has failed or has been conditioned does not appear for reexamination before the expiration of three years, he will be required to make a new application and pay an additional fee of \$35 before reexamination.

A candidate having failed twice must file a new application and pay an additional fee of \$35.

REQUIREMENTS FOR CERTIFICATION

I. GENERAL REQUIREMENTS

1. High ethical and professional standing.
2. Citizenship in the United States or citizenship—meaning native citizens—in Canada and Cuba.
3. Graduation from a medical school of the United States or Canada recognized by the Council on Medical Education and Hospitals of the American Medical Association.
4. A license to practice medicine.

5. Satisfactory completion of an internship of not less than one year in a hospital approved by the same Council.

6. Adequate training in dermatology and syphilology as a specialty.

Membership in the American Medical Association is recommended.

II. SPECIAL REQUIREMENTS

Applicants for certification by the board are classed in two groups as follows:

Group A consists of physicians who have limited their practice mainly to dermatology and syphilology for ten or more years, including a period of training satisfactory to the board.

Group B consists of physicians who have practiced dermatology and syphilology at least five years, including their period of training. For group B candidates to be examined from Jan. 1, 1940, to Jan. 1, 1945, the board will require two years of full-time planned training in clinical dermatology and syphilology, including adequate instruction in the following subjects related to the skin: histopathology, mycology, physics as related to physical therapy, and allergy.

III. FUTURE SPECIAL REQUIREMENTS

Beginning Jan. 1, 1945, additional requirements will become effective. By 1940 it is expected that sufficient facilities will be developed throughout the country to provide for three years' training of graduate students in accordance with the minimum requirements suggested by the Advisory Board for Medical Specialties and outlined in a syllabus issued by the board. These minimum requirements of special training for admission to examination in 1945 shall be as follows:

1. A period of study after the internship of not less than three years in clinics, dispensaries, hospitals or laboratories recognized by the same Council and approved by the American Board of Dermatology and Syphilology as competent to provide a satisfactory training in dermatology and syphilology.

2. This period of specialized training shall include:

(a) Graduate training in the basic medical sciences which are necessary to the proper understanding of the disorders and treatment involved in this specialty.

Instruction in the following fundamental subjects as related to the skin is deemed advisable by the board: embryology, histology, chemistry, physiology, bacteriology, mycology, parasitology, pathology, immunology, serology, pharmacology and materia medica, and physics of physical therapy.

(b) An active experience of not less than eighteen months in hospitals, clinics, dispensaries or diagnostic laboratories recognized by the same Council and approved by the American Board of Dermatology and Syphilology as competent to provide an adequate preparation.

(c) Examinations in the basic medical sciences of a specialty as well as in the clinical, laboratory and public health aspects.

3. An additional period of not less than two years of study and/or practice.

Therefore, candidates beginning their training after Jan. 1, 1940, for certification by this board must plan for a three years course of systematic training.

In 1945 and thereafter admission to examination by this board will be permissible only to applicants with such training. Classes A and B will be abolished and all candidates will be required to fulfil the same requirements.

REVOCATION OF CERTIFICATES

The certificates issued by the board are issued subject to the provisions of the certificate of incorporation and of the by-laws, and each certificate is subject to revocation in the event that:

(a) the issuance of such certificate or its receipt by the physician so certified shall have been contrary to any of the provisions of the certificate of incorporation or by-laws; or

(b) the physician so certified shall not have been eligible to receive such certificate, irrespective of whether or not the facts constituting him so ineligible were known to or could have been ascertained by the directors of the Board at the time of the issuance of such certificate; or

(c) the physician so certified shall have made any misstatement of fact in his application for such certificate or in any other statement or representation to the Board or its representatives; or

(d) the physician so certified shall have been convicted by a court of competent jurisdiction of a felony or of any misdemeanor involving, in the opinion of the Board of Directors, moral turpitude in connection with his practice of medicine; or

(e) the physician so certified shall have had his license to practice medicine revoked or shall have been disciplined or censured as a physician by any court or other body having proper jurisdiction and authority.

INSTRUCTIONS TO APPLICANTS

Fill out application blank in detail.

Enclose fee of \$35. (Make checks payable to the American Board of Dermatology and Syphilology, Inc.)

Include photographs as directed on application blank.

Enclose reprint of each published paper, if possible.

Send completed applications and above items to the secretary.

Please indicate under No. 13 on the application blank as complete data as possible about your training in dermatology and syphilis. Indicate the month and year, if possible, or at least the number of months of the various parts of your training and also whether full time or part time. If part time indicate whether one-half day, six days a week or three days a week, etc. If dispensary service is considered as part of your training, please indicate details here as well as under No. 14.

In No. 16 indicate clearly when you limited your practice to dermatology and syphilis.

If your training and your practice overlap, please explain under No. 19.

PUBLICATIONS OF THE BOARD

1. Booklet of Information.

2. Opportunities for Graduate and Postgraduate Students in Dermatology and Syphilology, containing a list of places where instruction may be obtained, and details about these places.

3. Syllabus of graduate training.

(a) To inform the student physician, intending to specialize, of the field to be covered in his preparation and the methods by which it can be accomplished.

(b) To aid the medical schools and the dermatological departments of medical schools and hospitals by outlining the scope of teaching required for specialization in dermatology and syphilology.

Further information may be obtained from the secretary-treasurer.

AMERICAN BOARD OF INTERNAL MEDICINE, Inc.

ERNEST E. IRONS, Chairman, Chicago.

REGINALD FITZ, Vice Chairman, Boston.

WILLIAM S. MIDDLETON, Secretary-Treasurer, 1301 University Avenue, Madison, Wis.

DAVID P. BARR, St. Louis.

LOUIS HAMMAN, Baltimore.

WILLIAM J. KERR, San Francisco.

JONATHAN F. MEAKINS, Montreal, Quebec.

JOHN H. MUSSEY, New Orleans.

G. GILL RICHARDS, Salt Lake City.

"... the membership of the board shall be maintained at the ratio of five members from the American College of Physicians and four members from the Section on the Practice of Medicine of the American Medical Association and that at least three of the members of the board from the American College of Physicians and two members of the board from the Section on the Practice of Medicine of the American Medical Association shall be of professorial rank in approved medical schools of the United States or Canada."

"Sec. 5, Art. 5, Articles of Incorporation."

"The term of office of members of the board succeeding the original board members shall be three years and until their successors are elected and qualified, and no such member shall serve more than two consecutive three year terms."

"Sec. 7, Art. 5, Articles of Incorporation."

PURPOSE AND OBJECTIVE

The purpose and objective of the board is the certification of specialists in the field of internal medicine, and the establishment of qualifications for such certification and of the procedure necessary for the accomplishment of such objective.

While the board is at present concerned chiefly with the qualification and procedure for certification in the general field of internal medicine, it is intended to inaugurate, as soon as practicable similar qualification and procedure for additional certification in certain of the more restricted and specialized branches of internal medicine, as gastro-enterology, cardiology, metabolic diseases, tuberculosis, allergic diseases, et cetera. Such special certification will be considered only for candidates who have passed the written examination required for certification in general internal medicine. The operation of such a plan will require the active cooperation and participation of recognized representatives from each of such special fields of medicine.

VALUE OF CERTIFICATION

1. An attest of special training and qualification for the practice of internal medicine as a specialty.

2. Publication with internists proper designation in a special registry of certified specialists and in the American Medical Directory.

QUALIFICATIONS OF CANDIDATES

Each applicant for admission to the examination shall be required to present evidence that he has met the following standards:

1. GENERAL.

A. Satisfactory moral and ethical standing in the profession.

B. Membership in the American Medical Association or, by courtesy, membership in such Canadian or other medical society or societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association. Except as here provided, membership in other societies shall not be required.

2. PROFESSIONAL.

A. Graduation from a medical school of the United States or Canada approved by the Council on Medical Education and Hospitals of the American Medical Association.

B. Completion of an internship of not less than one year in a hospital approved by the same council.

C. In the case of an applicant whose training has been received outside of the United States and Canada, his credentials must be satisfactory to the aforementioned council, the Advisory Board for Medical Specialties, and the National Board of Medical Examiners.

3. SPECIAL TRAINING.

A minimum of five years must elapse after completion of a year of internship in a hospital approved for intern training before the candidate is eligible for admission to an examination.

A. Three years of this period must be devoted to special training in internal medicine. This requirement should indicate a period of at least several months of graduate work under proper supervision in anatomy, physiology, biochemistry, pathology, bacteriology or pharmacology, particularly as related to the practice of internal medicine. This work may be carried on in any domestic or foreign medical school or laboratory recognized by the Council on Medical Education and Hospitals of the American Medical Association as offering appropriate facilities for this type of postgraduate training; or it may include a period of at least several months of graduate work under proper supervision in internal medicine or in its restricted and specialized branches in any domestic or foreign hospital, clinic or dispensary, or under the immediate preceptorship of an internist recognized by the above council as offering appropriate facilities for this type of postgraduate experience.

B. A period of not less than two years of special practice in the field of internal medicine or in its more restricted and specialized branches.

MEMORANDUM FOR THE GUIDANCE OF CANDIDATES

The American Board of Internal Medicine does not propose to establish fixed rules for the preliminary training of candidates for certification in this field. Broad general principles for training, however, may be outlined, although such suggestions as are made must of necessity be subject to constant changes reflecting the dynamic nature of the specialty.

1. A sound knowledge of physiology, biochemistry, pharmacology, anatomy, bacteriology and pathology in so far as they apply to disease is essential for continued progress of the individual who practices internal medicine. Such knowledge may be obtained in a number of ways:

A. By properly arranged and supervised graduate courses;

B. By the opportunities for study afforded by the appointment to a junior position in a department of physiology, biochemistry, pathology, etc. (see above) with attendance upon advanced lectures in the other subjects;

C. By advanced study in these subjects while an intern or resident medical officer, and by the application of the principles involved to patients under one's control;

D. By the detailed study, under supervision, of a problem or topic in medicine in which the student brings the basic facts of physiology, pathology, etc., into direct relation with the concrete clinical problem. The analysis of a problem with detailed knowledge of its fundamental pathologic or physiologic background does much to stimulate thoroughness, clear thinking and progress.

2. A portion of the written examination is designed to test the candidate's knowledge in these "preclinical" subjects and especially in their application to disease rather than their purely laboratory aspects.

3. The mere factual knowledge of medicine and its basic sciences is not sufficient. The candidate must have had training in their use in furthering his understanding in clinical medicine. This implies practical experience under the guidance of older men who bring to their clinical problems ripe knowl-

edge and critical judgment. Preparation to meet this requirement adequately may be even more difficult to obtain than the so-called scientific training. It may, however, be acquired in the following ways:

A. By work in a well organized hospital outdoor clinic conducted by competent physicians;

B. By a prolonged period of resident hospital appointments likewise directed by skilled physicians;

C. By a period of training in intimate association with a well trained and critical physician who takes the trouble to teach and guide his assistant rather than to expect him only to carry out the minor drudgery of a busy practice.

4. The board does not consider it to the best interests of internal medicine in this country that rigid rules be formulated as to where or how the training outlined above is to be obtained. Medical teaching and knowledge are not the same. The opportunities of all prospective candidates are international. Some may have the opportunity of widening their knowledge by a period of study abroad. Others, at the other extreme, may be restricted to a comparatively narrow geographic area and their more detailed training must be obtained in short periods of good study scattered over a longer time. Although it is required that at least five years must elapse between the termination of the first intern year and the date when the candidate is eligible to take the examination, a longer period is advisable. The board wishes to emphasize that time and training are but a means to the end of acquiring a broadness and depth of knowledge of internal medicine which the candidate must demonstrate to the board in order to justify it in certifying that he is competent to practice internal medicine as a specialty. The responsibility of acquiring the knowledge as best he may rests with the candidate, while the responsibility of maintaining the standard of knowledge required for certification devolves on the board.

METHOD OF EXAMINATION

The examination required of candidates for certification as specialists in internal medicine will comprise Part I (written) and Part II (practical or clinical).

Part I. The written examination is to be held simultaneously in different sections of the United States and Canada on the third Monday of February and October of each year. This examination will be divided into a morning and an afternoon session of three hours each, and the two sessions A and B will include the following:

A. Question in applied physiology, anatomy, physiological chemistry, pathology, bacteriology and pharmacology as related to internal medicine as well as the cultural aspects of medicine.

B. Questions in general internal medicine.

Part II. Candidates successful in the written tests will be eligible for the practical or clinical examination, which will be conducted by the members of the board near the time and place of the annual meeting of the American College of Physicians and of the American Medical Association. This examination is conducted at the bedside, and each candidate will be assigned one or more patients in the hospital. A written record of the clinical history and examination is required which forms the basis of the oral conference conducted by one or more examiners.

APPLICATION

Candidates for examination shall make their application on a prescribed form which may be obtained from the office of the secretary-treasurer.

The application shall contain a record of the candidate's premedical and medical training as well as of internships, graduate study, hospital or dispensary staff appointments, teaching positions, membership in medical societies, medical papers published and the names of two well known internists to whom the board may refer for professional and character reference.

The application shall also be accompanied by two recent, unmounted, signed photographs of the candidate and the registration and examination fee of \$40, which fee will cover both the written and practical examinations. The registration fee of \$10 is not refundable. An additional fee of \$10 will be required when the certificate is issued.

CERTIFICATES

The certificate issued by the American Board of Internal Medicine shall be in such form as to comply with the articles of incorporation and the by-laws and shall be signed by the officers and members of the board, and shall bear the official seal of the board.

Certificates of the board will be issued to candidates who have satisfactorily completed the written and practical examinations, and been found qualified by the board to practice the specialty of internal medicine.

REVOCATION OF CERTIFICATES

The American Board of Internal Medicine shall have the sole power, jurisdiction and right to determine and decide whether or not the evidence or information placed before it is sufficient to constitute grounds for revocation of any certificate issued by this board, and the decision of the board in the premises shall be final.

All official correspondence should be addressed to the secretary-treasurer.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY, Inc.

WALTER T. DANNREUTHER, President, New York.
JOSEPH L. BAER, Vice President, Chicago.

LOUIS E. PHANEUF, Vice President, Boston.

PAUL TITUS, Secretary-Treasurer, 121 South Highland Avenue, Pittsburgh.

E. A. SCHUMANN, Member of Executive Committee, Philadelphia.

JENNINGS C. LITZENBERG, Minneapolis.

G. D. ROYSTON, St. Louis.

R. D. MUSSEY, Rochester, Minn.

L. A. EMGE, San Francisco.

ORGANIZATION

In 1930 the American Association of Obstetricians, Gynecologists, and Abdominal Surgeons, the American Gynecological Society, and the Section on Obstetrics, Gynecology, and Abdominal Surgery of the American Medical Association, each elected three Fellows to constitute the American Board of Obstetrics and Gynecology.

Dr. Walter T. Dannreuther of New York, Dr. Paul Titus of Pittsburgh and Dr. Grandison D. Royston of St. Louis were appointed to represent the American Association of Obstetricians, Gynecologists, and Abdominal Surgeons; Dr. Jennings C. Litzenberg of Minneapolis, Dr. Joseph L. Baer of Chicago, and Dr. E. A. Schumann of Philadelphia were appointed to represent the American Gynecological Society; Dr. Fred L. Adair of Chicago, Dr. R. D. Mussey of Rochester, Minn., and Dr. E. D. Plass of Iowa City, Iowa, were appointed to represent the Section on Obstetrics and Gynecology of the American Medical Association. Dr. Adair and Dr. Plass were succeeded following their recent resignations by Dr. L. E. Phaneuf of Boston and Dr. L. A. Emge of San Francisco.

The board was incorporated and organized and held its first meeting in September 1930. At that time the By-Laws were adopted and provision was made by resolutions for its proper functioning.

This board had been in the process of organization since 1927 and put into action a determined effort on the part of these three national organizations to improve the standards of practice of obstetrics and gynecology.

Experienced practitioners of the specialty are required to undergo a practical clinical examination, whereas a younger group has both a written and clinical examination and must also submit records of a group of cases in order to qualify for certification.

After 1941, no such distinction will be made, and all applicants will be obliged to fulfill all of the requirements, including the written examination in obstetrics and gynecology and to submit case records, as well as the general oral-clinical and pathological examination in obstetrics and gynecology.

PURPOSES

First. To elevate the standards and advance the cause of obstetrics and gynecology.

Second. To determine the competence of specialists in obstetrics and gynecology.

Third. To grant and issue certificates, or other evidence of special knowledge in the field of obstetrics and gynecology, to voluntary applicants and candidates therefor.

Fourth. To arrange, control, and conduct examinations to test the qualifications of voluntary candidates.

Fifth. To serve the public, hospitals and the medical schools by preparing lists of practitioners who shall have been certified by the board. These activities proceed from the nature of the business and the objects or purposes proposed to be transacted, promoted and carried on by it" are as follows:

"To encourage the study, improve the practice, and advance the cause of obstetrics and gynecology, subjects which should be inseparably interwoven; and to grant and to issue to physicians duly licensed by law, certificates or other equivalent recognition of special knowledge in obstetrics and gynecology."

NO DEGREES OR LEGAL RESTRICTIONS

Each certificate granted or issued does not of itself confer or purport to confer upon any person any degree or legal qualifications, privileges or license to practice obstetrics or gynecology, nor does the board intend in any way to interfere with or limit the professional activities of any duly licensed physician. Its chief aim is to standardize qualification for specialists in obstetrics and gynecology, and to certify as specialists those who voluntarily comply with the board's requirements.

VALUE OF CERTIFICATE

The national obstetrical and gynecological organizations, which have participated in the formation of the board and are sponsoring its activities, as well as other societies, attach considerable importance to its certificate. Both the medical and the lay public, including hospital directors, have come to utilize the certificate from this board as a means of determining who are well grounded as specialists in obstetrics and gynecology.

Lists of those holding certificates from this board who are limiting their practice to obstetrics and gynecology are published and issued from time to time by the board; similar lists are published by the *American Journal of Obstetrics and Gynecology*, and also appear in the *American Medical Directory*. This latter indicates diplomates of this and other boards by means of numerical symbols appearing in the biographic records. This directory, however, does not give such special recognition to diplomates who fail to maintain membership in the American Medical Association, or the Canadian or other medical societies recognized for this purpose.

A joint directory of specialists certified by the thirteen major and two affiliate special boards was published in 1940.

This board holds active membership in the Advisory Board for Medical Specialties.

This board, in cooperation with the Council on Medical Education and Hospitals of the American Medical Association, is conducting a survey of institutions providing acceptable residencies and internships in obstetrics and gynecology.

Applicants sign an agreement empowering the board to revoke their certificates and to remove their names from its lists, if they fail to abide by the regulations governing limitation of practice to the specialty or otherwise violate the standards of ethical practice.

For emphasis it is repeated that the board does not intend to, and cannot, in any way interfere with or limit the professional activities of any duly licensed physician, but its aim is toward adequate qualifications for those who claim to be specialists in obstetrics and gynecology.

ELIGIBILITY REQUIREMENTS

Requirements for Applicants. Each applicant, before he shall become eligible to receive such certificate or other evidence of recognition, (a) must establish in a manner satisfactory to the board of directors that he is a physician duly licensed by law to practice medicine, that he is of high ethical and professional standing, and that he has received adequate training in obstetrics and gynecology as a specialty; (b) must have had conferred upon him a degree in medicine by an institution of learning approved by the Advisory Board for Medical Specialties and the Council on Medical Education and Hospitals of the American Medical Association; (c) must make application to the examiners whose duty it shall be to investigate the applicant's credentials and make a survey of his character; (d) must assure the board that he is limiting his practice to obstetrics and/or gynecology and that he intends to continue to do so, and (e) should have membership in the American Medical Association, or membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association.

Each candidate should have certain fundamental knowledge of the basic essentials of anatomy, pathology, bacteriology, physiology, pharmacology, and therapeutics as related to the practice of obstetrics and gynecology. Clinical training should consist, subsequent to graduation, of at least one year's general rotating internship, and thereafter a special residency in obstetrics and gynecology for a period of at least three years, not necessarily consecutive. The board accepts the fifth or "intern" medical school year required at some schools in lieu of the usual fifth or intern "clinical training" year following graduation. As a substitute for special training, service with a qualified preceptor, preferably one who has been certified by the board, may be acceptable. The exact time basis for this has not been specified, and each case will be reviewed and decided separately by the credentials committee. The time for this type of training will vary with the amount of work done

with the preceptor. At least a fundamental knowledge of both obstetrics and gynecology is essential regardless of whether a candidate's practice is limited to one or the other branch. As heretofore, all candidates will be required to stand examination in both branches of the specialty, regardless of the fact that the major part of their practice may be in one or the other branch of the specialty.

This board deprecates the practice of obstetricians and gynecologists engaging in other fields of practice than that in which they profess to be specialists. The board does not exclude from examination, however, obstetricians or gynecologists who practice abdominal surgery and urology in the female, as well as breast surgery, because of the correlation of these activities. The board has ruled that physicians who accept male patients in their private or other practice, for operative or other care, cannot be regarded as specialists in obstetrics and gynecology. Special certifying boards in general surgery and internal medicine have now been organized and such individuals should apply to these boards for certification.

Application must be on a special blank which may be procured from the secretary and forwarded with the other required credentials and the application fee. Applications must be in the office of the secretary at least ninety days prior to the date of examination.

CLASSIFICATION OF APPLICANTS

Until Jan. 1, 1942, applicants for such certificates or other recognition shall be classified by the credentials committee as follows:

Group A. Those who have limited their practice to obstetrics and/or gynecology for a period of ten years or more, having had adequate special training following a one year general internship.

Applicants who have qualified under group A shall be required to undergo and pass a practical, oral, clinical and laboratory examination, including obstetrical and gynecological pathology. The board of directors may grant and issue a certificate or other evidence of recognition to each such applicant who shall have passed such examination in a manner and with a grade satisfactory to the board of directors, and who shall have met all other requirements therefor as hereinabove provided. (After 1941 case records and written examinations will also be required as at present for group B.) As heretofore, all candidates will be required to stand examination in both branches of the specialty, regardless of the fact that the major part of their practice may be in one or the other branch of the specialty.

Group B. Those who have had: (1) at least one year of intern service in a hospital approved by the Council on Medical Education and Hospitals of the American Medical Association, (2) five years or more practice thereafter, including at least three years of special training in obstetrics and/or gynecology satisfactory to the board of directors, and (3) who are now limiting their practice to obstetrics and/or gynecology. Opportunity for personal responsibility during this period of training is highly desirable.

Applicants who have qualified under group B shall be required to take and pass a written clinical and laboratory examination in obstetrics and gynecology, including obstetrical and gynecological pathology, as well as an oral, practical examination. Each candidate shall submit 50 typewritten case reports of major pathological obstetrical and/or gynecological cases with or without operative procedures. After Jan. 1, 1942, case records must be of patients treated within four (4) years of the date of the candidate's application. The number of residency cases submitted should not be more than half (25) of the total number of fifty (50) cases required. Candidates must attain a passing grade in both the written examination and case histories before becoming eligible for the oral, clinical, and pathological part of the examination. The board of directors may grant and issue a certificate to each such candidate who shall have passed such examination and who shall have submitted reports on such cases in a manner and with a grade satisfactory to the board of directors, and who shall have met all other requirements as hereinabove specified.

Effective Jan. 1, 1942, the requirements for all candidates will be changed to be as follows: Those who have had: (1) at least one year of intern service in a hospital approved by the Council on Medical Education and Hospitals of the A. M. A., (2) a minimum of seven years of practice thereafter, including at least three years of special training in obstetrics and/or gynecology satisfactory to the board of directors, and (3) who are now limiting their practice to obstetrics and/or gynecology. Opportunity for personal responsibility during their period of training is highly desirable.

APPLICATION BLANK AND FEES

Application must be made on a special blank which may be procured from the secretary and forwarded with the other required credentials and the application fee. The secretary cannot make any eligibility rulings. These are made only by the credentials committee after reviewing the candidate's formal application, which must be completely filled out and previously filed with the secretary. Applications cannot be considered for classification and action by the credentials committee unless accompanied by an application fee of \$15, which is not returnable.

The examination fee for candidates is \$85, payable when the candidate is notified of his acceptance for examination. This examination fee shall not be returnable after the candidate has been officially accepted by the credentials committee and notified to report for examination. If a candidate fails in his examination he will be admitted to a second examination after one year but within three years without additional fees. After two failures an applicant must file a new application and pay fees, as above, before the third examination.

Applicants declared ineligible for admission to examination may reopen their applications within one year of its filing date without payment of an additional application fee.

Applications and application fees must be in the office of the secretary at least ninety days prior to the scheduled date of the examinations.

The fees, totaling \$100, have been carefully computed on a basis of cost of examinations and are used entirely for administrative expenses. Examiners serve without compensation other than actual expenses.

Applicants who fail to exercise the examination privilege within three years of the date of filing the application are required to file a new application and pay a new application fee.

EXAMINATIONS

Written examinations are held simultaneously once yearly in various cities of this country and Canada. Arrangements will be made for candidates to report in any convenient city where there may be a diplomate of this board to conduct or supervise the written examination sent out under sealed cover from the board's office. Case histories must be submitted to the local examiner at the same time.

The written examination and submission of case histories is scheduled for the first Saturday of January. Application on an official application form for admission to this examination must be filed in the office of the secretary at least ninety days prior to this date. Grades cannot be mailed from the secretary's office until about March 15.

Part I of the examination must be taken by all applicants classified in group B, but not by those in group A until 1942.

Part I consists of a comprehensive written examination and the filing of fifty case histories. Only one group B, Part I, examination will be held yearly. No group B candidate is eligible for the oral and pathological examinations until he has passed the written portion and his case histories have been found satisfactory. The passing grade for the written examination and case records is 75 per cent, and a candidate whose grade in either or both falls below 75 per cent is conditioned. Either or both of these conditions must be removed before the candidate is eligible for Part II. Reexamination for the removal of conditions in Part I may be taken at any regular examination after one year but within three years without payment of an additional fee. Candidates who successfully complete the Part I examinations proceed automatically to the Part II examinations held later in the year.

The written examination consists of questions on both obstetrics and gynecology, as evidence of a fundamental knowledge of both branches is required of all candidates. The fifty case records of each group B candidate must be presented with his examination paper to the local examiner. Both the written examination papers and typewritten case records will be reviewed by an examiner located in a remote district from that of the candidate.

Part II. The general oral-clinical and pathological examinations given all candidates will be conducted by the entire board at or near the time and place of the annual meeting of one or more of the national societies represented on this board, usually that of the American Medical Association. Applications must be filed at least ninety days prior to the date of examination. This examination is given to all applicants in group A and group B. The candidates will be expected to identify and discuss several obstetrical and gynecological pathologic specimens and histologic sections. As heretofore, all candidates will be required to stand examination in both branches of the specialty, regardless of the fact that the major part of their

practice may be in one or the other branch of the specialty. An endeavor will be made to adapt the details of the oral examination to each candidate's experience and practice, and will be particularly directed to ascertain his familiarity with recent obstetrical and gynecological literature, the breadth of his clinical experience, and his general qualifications as a specialist in obstetrics and gynecology.

Examiners report orally upon each candidate to the assembled board, after which the results of their examinations are considered jointly. After a general consideration of the details of the candidate's oral and pathological examination, including a review of his capability and general adaptability, the candidate is passed or failed by the entire board. No conditions are given in Part II of the examination. When a candidate fails in Part II of the examination, he is not required to repeat Part I, but to take a reexamination in the oral, clinical, and pathological portions only. Reexamination may be taken within three years of the original examination or first failure.

After 1941, the distinction between candidates in group A and group B will be abolished. After that time new rulings similar to those now pertaining to group B will apply to all applicants, and every candidate will be required to undergo the written examinations and present case records (Part I), as well as the oral-clinical and pathological examinations (Part II) in both obstetrics and gynecology.

CASE RECORDS

(After January 1, 1942, case records submitted must be of applicants treated within four (4) years of the date of the candidate's application. The number of residency cases submitted should not be more than half (25) of the total number of fifty (50) cases required.)

Case histories need not be copied verbatim from the hospital records but must be sufficiently complete so that the examiner can determine the diagnosis of existing conditions and evaluate the judgment of the candidate in his choice of procedure. Each history must give the hospital number and name of the hospital at which the patient was treated or operated upon, together with all pertinent dates. Histories must be typewritten on standard size paper, 8½ x 11 inches, assembled by individual cases, and submitted without any form of binding other than light weight paper folders. The following data should be as complete as possible: essential points in history and examination; the clinical diagnosis and in operative cases preoperative diagnosis, ample summary of operative procedure; clinical and pathological diagnosis; summary of postoperative course with special reference to morbidity; findings at time of discharge from hospital and at six months "follow-up."

In both obstetrical and gynecological case histories not more than ten major selected nonoperative cases may be included. When pathological tissue is removed, adequate gross and microscopic descriptions are required. The candidate and the pathologist are required to employ the accepted nomenclature in the classification of gross and microscopic reports of pathological findings.

The obstetrical case records should show the date of the first prenatal visit and any special features bearing on the case. The examination of obstetric patients should include a routine serologic test for syphilis; also blood grouping or typing should be noted on histories of patients requiring transfusions. The weight and condition of the child at birth and at the time of discharge from the hospital should be shown on the obstetric history.

A final statement must be prepared for each case, to include an account of the candidate's personal observations of the case both prior to and subsequent to operation. These data must include (1) the basis for the diagnosis, (2) the facts that determined the course of the treatment, and (3) critical conclusions to be drawn from the outcome of the case. Case reports which do not include such discussion and comments will not be reviewed by the examiners. Obstetrical histories which omit measurements of the pelvic inlet and outlet will be considered incomplete.

The group of histories must include a variety of material rather than a number of cases of one type. The histories should be sufficiently detailed so that the examining board, after a careful reading of the records will be able to answer the following questions:

1. Is the diagnosis warranted by the recorded data?
2. If not, how lacking?
3. Are the indications for operation clearly stated?
4. Is the technic satisfactorily described?
5. Do the results justify the procedure?
6. Do the conclusions drawn indicate a grasp of the subject?

Only those records which carry the candidate's personal deductions, conclusions, and comments will be credited toward

the fifty, and these records must be diversified. Case records which do not conform to board regulations will not be graded.

Note: Two complete index lists of these cases must accompany the records. Separate lists should be made for each individual hospital at which operations were performed. These lists must state the candidate's name, and at the head of each page the name and address of the hospital, the name of the patient, admission number, date of admission, date of operation, and date of discharge. The candidate must have these lists verified by the librarian, or preferably the superintendent, of each individual hospital from which these case records come. All verifications must be formally signed by the responsible hospital official.

Case histories are to be presented with the complete examination paper to the examiner conducting the written examination. They are not to be sent by the candidate to the secretary.

The final action of the board is based upon the candidate's professional record, training and attainments, as well as on the results of his formal examination.

Communications should be addressed to the secretary-treasurer.

AMERICAN BOARD OF OPHTHALMOLOGY

CONRAD BERENS, Chairman, New York.

WILLIAM L. BENEDICT, Vice Chairman, Rochester, Minn.

JOHN GREEN, Secretary-Treasurer, 6830 Waterman Avenue, St. Louis.

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FREDRICK C. CORDES, San Francisco.

ORIGIN, AIMS AND METHODS

In 1913 the American Ophthalmological Society, the Section on Ophthalmology of the American Medical Association, and the American Academy of Ophthalmology and Otolaryngology appointed committees to report on ophthalmic education.

In 1914 these committees recommended that medical schools of the first class establish graduate courses in ophthalmology leading to an appropriate degree, and that these courses should represent not less than two years of systematic work subsequent to taking the degree of Doctor of Medicine. There was unanimous agreement as to the need of systematized and standardized training of those who are to practice ophthalmology, but it was clear that, in the near future, the number who would take the complete course leading to such a degree would be small. Moreover, such a course would not solve the problem of differentiating, in some degree, between the competent and the incompetent among those now in practice in ophthalmology. The committees were continued and, in 1915, they made further recommendations, as a result of which a joint board was created consisting of three representatives from each of the three special societies.

In 1916, after much preliminary work, this board was organized as the American Board for Ophthalmic Examinations (later changed to "American Board of Ophthalmology"). It was incorporated May 3, 1917.

In 1934 the plan of organization was changed so that each component society elects four members, instead of three, to form the board. The members of this board are chosen in the same manner as the presiding officers of these societies are chosen. One is elected each year by each of the societies represented on the board, to serve for four years.

As other specialties formed boards similar to the American Board of Ophthalmology the need for some supervising and coordinating control led to action by the American Medical Association in 1933 authorizing the Council on Medical Education and Hospitals: (1) to formulate standards of administration, based on those of the American Board of Ophthalmology, of Otolaryngology, of Gynecology and Obstetrics, and of Dermatology and Syphilology; and (2) to recognize officially new boards meeting these standards.

The Constitution of the Advisory Board for Medical Specialties which was organized in 1934 states that: "This board shall act in an advisory capacity to such organizations as may seek its advice concerning the coordination of the education and certification of medical specialists."

CHIEF FUNCTIONS

1. To establish standards of fitness to practice ophthalmology cooperating with hospitals and graduate schools of medicine.

2. To arrange and conduct examinations to test the qualifications of those who practice ophthalmology, and to confer certificates upon those who meet the standards established by the Board.

3. To act as preceptors for prospective students of ophthalmology.

NO DEGREES

The conferring of a degree is left to the universities, where it belongs, and the board makes no attempt to control the practice of ophthalmology by any license or legal regulation whatever. It simply aims to establish a standard of fitness to practice ophthalmology, and to certify any who, voluntarily, apply and satisfy the board of their qualifications.

The following is the wording of the present certificate:

The American Board of Ophthalmology hereby certifies that(name)..... has pursued an accepted course of graduate study and clinical work, and has successfully passed the examination in ophthalmology conducted under the authority of this Board.

Date.....

Signatures of members of the Board

Many special eye hospitals as well as general hospitals in all parts of the country require the certificate for appointment or promotion on their staffs. In addition, many societies now require the certificate as a prerequisite for membership.

The number of institutions and societies which require the certificate of the board is increasing.

The American College of Surgeons recognizes the certificate of this board as evidence of academic fitness in ophthalmology. It requires from candidates for its Fellowship who hold such certificates only half as many case histories as from those who are not so certificated.

Up to Jan. 1, 1940, approximately 1,700 ophthalmologists have received the certificate of the board.

FEEES

The fee for the examination and the certificate of the American Board of Ophthalmology is \$50. Of this sum \$25, which is not returnable, must accompany the application. The balance of \$25 must be paid when the certificate is ready for issuance.

If a candidate fails in the written examination, he may be admitted to a second examination within three years, for which there will be an additional fee of \$10.

Applications expire three years from date of application. If a candidate has not appeared for examination before expiration of his application, he will be required to apply again and pay an additional application fee of \$25.

The fees of candidates are used solely for defraying the actual expenses of the board. The members of the board and their associates receive no emoluments.

GENERAL REQUIREMENTS FOR ALL CANDIDATES

1. Application on special blank, which may be obtained from the secretary, must be filled out accurately. Letters of endorsement from two well known physicians (preferably ophthalmologists) together with any other required credentials must accompany the application and must be sent to the secretary at least ninety days before the candidate expects to appear before the board.

2. The candidate must have high ethical and professional standing in his community.

3. Membership in the American Medical Association or such other societies as are recognized for the purpose by the Council on Medical Education and Hospitals of the American Medical Association. In the case of an applicant whose training has been received outside of the United States and Canada, his credentials must be satisfactory to the Board; if he has been in practice less than ten years he should obtain the certificate of the National Board of Medical Examiners.

4. A list of papers or books published by the candidate must be submitted.

5. Reports of ten cases of varied character which have been observed and treated by the applicant are required.

6. An examination divided into Part I (written) and Part II (clinical, practical and laboratory). In both of these examinations a knowledge of the practical application of the basic sciences of ophthalmology will be required.

7. Citizenship in country where candidate practices.

The final action of the board is based on the candidate's professional record, training and attainments as well as on the results of his formal examinations.

GENERAL EDUCATIONAL REQUIREMENTS

(Applicable as far as possible after 1942)

1. A degree from a medical school of high standing satisfactory to the board and approved by the Council on Medical Education and Hospitals of the American Medical Association. In the case of an applicant whose training has been received outside of the United States and Canada, his credentials must be satisfactory to the board. He may be required to obtain the certificate of the National Board of Medical Examiners.

2. Completion of an internship of not less than one year in a hospital approved by the same Council.

SPECIAL TRAINING

(Applicable as far as possible after 1942)

A period of combined study, training and practice of not less than three years in approved medical schools, hospitals, clinics, dispensaries, laboratories, perceptorships and private practice.

(A total of five years will be required of candidates practicing eye, ear, nose and throat.)

1. This shall include graduate study of the basic medical sciences which are fundamental to the intelligent practice of ophthalmology, particularly: anatomy, histology, embryology, optics, physiologic optics, visual physiology and psychology, pathology, bacteriology, pharmacology. Mere factual knowledge of these subjects is not sufficient. The candidate must have had training in their application and in their use in clinical ophthalmology, especially in refraction, disorders of motility and binocular vision, perimetry, and in the skilful adjustment and use of instruments such as the ophthalmoscope, retinoscope, slit lamp and microscope.

2. Active clinical experience in approved hospitals, clinics, dispensaries and private practice. Library and laboratory facilities should be utilized for the intensive study of cases.

The subject matter to be covered under 1 and 2 is outlined in the syllabus prepared by the board.

These requirements may be met in various ways:

BASIC STUDIES

A—By courses in approved graduate medical schools.

B—By the opportunities for study afforded by the appointment to a junior position in one of the departments with attendance at advanced lectures in the other subjects.

C—By advanced study of these subjects while a resident and by application of the principles involved to patients under one's control.

D—By the detailed study, under supervision or as assistant to an experienced research worker, of some problem or topic which brings the basic facts of physiology, pathology, etc., into direct relation with the concrete clinical problem. The analysis of a problem with detailed knowledge of its fundamental physiologic and pathologic background does much to stimulate thoroughness, clear thinking and progress.

CLINICAL EXPERIENCE

A—By residency in an approved hospital. The most desirable of these residencies have regular lectures covering the whole field of clinical ophthalmology and of the basic subjects as applied in clinical practice. Many of these have seminars at which residents report cases which they have carefully worked up. These are discussed by the other residents and by the staff and the method of presentation as well as the subject matter critically considered.

B—There are many residencies, usually of 12 months, which do not furnish regular instruction by lectures and quizzes and seminars. If he has access to a good library and laboratory, the student can learn a great deal and has some advantages over the man who expects to be "spoon-fed." The syllabus prepared by the board will guide him in his selection of topics to be studied.

C—There are some opportunities to continue the study and experience by securing appointments as fellows.

D—By a period of training in association with a well trained and critical ophthalmologist who takes the trouble to teach and guide his assistant.

E—After completing a residency it is of great advantage to secure a position in a clinic as fellow or assistant. This may require only part time work, but due credit will be given. Its value to the student depends on how much study he puts into it and on how competent his seniors are.

F—Research under competent critical and sympathetic supervision will give first hand insight into (1) the methods whereby old knowledge was and new knowledge is acquired, and (2) the pitfalls which accompany attempts to enlarge the sphere of knowledge. Only in this way can the candidate evaluate facts

of the past and present in the intelligent critical way which is expected of the specialist.

The candidate who cannot secure the type of residency he desires should not despair, for his progress depends far more on how he uses his opportunities than on the opportunities themselves.

WHAT CONSTITUTES THE EXAMINATION

In determining the question of certification, the examiners rely on the following criteria:

1. The applicant's professional record;
2. The applicant's case reports;
3. A written examination;
4. A practical clinical and laboratory examination.

CASE REPORTS

Detailed instructions for the preparation of case reports should be obtained from the secretary.

WRITTEN EXAMINATION: PART I

The written examination may be given simultaneously in as many cities as the board may determine suitable for the purpose. A candidate, to be eligible for Part I, must meet all general requirements. Arrangements will be made for candidates to report in a convenient city where there may be a board member, or an associate member, to conduct and supervise the written examination.

These examinations will not be given at the time of the oral and clinical examination or board sessions but will be held at least sixty days before such examinations simultaneously in different parts of the country at places reasonably convenient to candidates.

No candidates shall be eligible for the practical examination until he has passed the written examination and his case reports have been found satisfactory. In the event of failure in either or both of these preliminary tests, a candidate is conditioned and the conditions must be removed before the candidate is eligible to appear for the practical (Part II) examination.

The written examination questions will be on all subjects as follows:

External Diseases.	Perimetry and Campimetry
Ophthalmoscopy	Relation of the Eye to General Diseases
Pathology-Histopathology	Therapeutics and Operations (including Practical Surgery)
Refraction and Retinoscopy	Optics and Visual Physiology
Anatomy and Embryology	
Ocular Motility	

Written examination papers will be reviewed by examiners who reside in districts remote from those in which the candidate practices.

PRACTICAL AND CLINICAL EXAMINATION: PART II

The purpose of the examination is to determine the competence of the candidate to practice ophthalmology.

Candidates must be prepared to be examined in the whole field covered by the syllabus of the board. The time spent in preparation will count less than the knowledge and experience acquired as shown on examination.

The subdivisions of the practical examination are as follows:

1. External diseases of the eye, lacrimal passages, etc., including inspection, focal illumination, use of loupe and slit lamp, examination of reactions of the pupil, of tension by tonometer and by fingers.

2. Ophthalmoscopy. Several patients will be examined by the candidate and the findings described or drawn. The ability to see with the ophthalmoscope and to interpret what is seen, and the systematic and thorough methods of examination used by the candidate will count for more than mere statement of diagnosis. A candidate should bring his own ophthalmoscope so that he may not suffer the handicap of an unfamiliar instrument.

3. Pathology. The candidate should be familiar with general clinical pathology as well as the etiology, pathology, and bacteriology of diseases of the eye. He will be asked to examine microscopic slides and to recognize ordinary normal and pathologic histology of the eye and to identify the commoner microorganisms.

4. Refraction. A candidate will examine patients and show mastery of various methods, and of the principles of refraction and of retinoscopy. He should bring his own retinoscope.

5. Ocular Motility. The candidate will demonstrate upon patients his familiarity with routine methods of examination for abnormalities of the ocular muscles.

6. Practical Surgery. A candidate will demonstrate his surgical technic upon animals' eyes. To have the advantage of using instruments with which he is familiar, he should bring his own equipment for performing a regular combined extraction of the lens.

DATES OF PART II EXAMINATION

Examinations will be held annually at or near the time and place of the meeting of the American Medical Association; also at other times and places at the discretion of the board, depending on the number of applications from any region.

Notices of all examinations will be found in The Journal of the American Medical Association, and in the special journals of ophthalmology.

REEXAMINATION

Candidates may be reexamined as often as they desire, provided they give satisfactory evidence of adequate preparation. Six months must elapse between examinations and the board may, at its discretion, deny the candidate the privilege of reexamination.

REVOCATION OF CERTIFICATE

Any certificate issued by the board shall be subject to revocation by the board at any time in case it shall determine in its sole judgment that a candidate, who has received the certificate of the American Board of Ophthalmology, either was not properly qualified to receive it, or has since its receipt become disqualified.

PREPARATORY GROUP

In establishing a preparatory group of prospective candidates for its certificate, the American Board of Ophthalmology plans to assist physicians who wish to study ophthalmology so that they will be acceptable as candidates for examination and certification when they have completed the requirements.

Any graduate or undergraduate of an approved medical school is eligible to make application for membership in this group. Candidates so applying will be notified officially by the secretary when the board has accepted their applications. If accepted, data will be sent concerning ethical and educational requirements. Syllabuses and other information will be made available to them. The board desires to help candidates improve their opportunities so that they will be fully prepared for the examination.

It is essential that candidates conduct themselves in an entirely ethical manner to the end that they bring honor to the profession.

Information and counsel will be available at all times to accepted candidates in this group through advisers who are members or past members of the board.

Members of the preparatory group must keep a summarized record of their activities, two copies of which will be sent to the secretary in January of each year and will be incorporated in the final application for examination and certification.

The fee for application for membership in the preparatory group is \$10. This will be deducted from the \$50 which is required of every candidate for examination. When the candidate makes application for the examination, he will be required to pay \$25, and the balance of \$15 must be paid when the certificate is issued. No fees will be refunded.

It is of increasing importance that a physician specializing in diseases of the eye obtain the certificate of the American Board of Ophthalmology. The American Medical Association will especially designate certificated ophthalmologists in future directories. A special directory of all certificated specialists will be published by the Advisory Board for Medical Specialties.

Many national and local ophthalmologic societies demand the certificate of the American Board of Ophthalmology before admission. Promotion in many hospitals cannot be obtained unless the applicant holds the certificate of the board.

For sufficient reason, a person enrolled in this preparatory group may be dropped by vote of the board.

Communications should be addressed to the secretary-treasurer.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY, Inc.

WILLIS C. CAMPBELL, President, Memphis, Tenn.
PHILIP D. WILSON, Vice President, New York.
FREMONT A. CHANDLER, Secretary-Treasurer, 6 North Michigan Avenue, Chicago.
GEORGE E. BENNETT, Baltimore.
FRANK D. DICKSON, Kansas City.
MELVIN S. HENDERSON, Rochester, Minn.
SAMUEL KLEINBERG, New York.
PHILIP LEWIN, Chicago.
JOHN C. WILSON, Los Angeles.

INTRODUCTION

The rapid growth of specialism and the increasing number of physicians limiting themselves in their practice to one branch of medicine or surgery emphasize the need for the proper certification of specialists in the various branches of the

medical science. In recognition of this condition the American Board of Orthopaedic Surgery, Inc., aims to elevate the standard of qualifications for the practice of orthopaedic surgery and to certify those surgeons who voluntarily comply with its requirements.

In order to place orthopaedic surgery on the highest possible plane, the American Orthopaedic Association, the Section on Orthopaedic Surgery of the American Medical Association and the American Academy of Orthopaedic Surgeons united in organizing a certifying board which was incorporated in the year 1934 as the American Board of Orthopaedic Surgery, Inc.

The American Board of Orthopaedic Surgery, Inc., has been officially approved by the Advisory Board for Medical Specialties and by the Council on Medical Education and Hospitals of the American Medical Association.

WHAT THE BOARD WILL ACCOMPLISH

1. Certification by the board will establish a criterion to both interested lay and professional groups for judging the qualifications of an orthopaedic surgeon. Thus a reliable guide will be furnished for the choosing of consultants.

2. Hospitals and other organizations will no doubt establish rules limiting service on their permanent staffs to those certified by the board.

3. It will gradually tend to limit the practice of orthopaedic surgery to those properly qualified.

4. Certification by the American Board of Orthopaedic Surgery is one of the essential requirements for membership in the American Orthopaedic Association and the American Academy of Orthopaedic Surgeons.

Excerpts from Articles 1, 2, 7 and 8 of the By-Laws.

Article 1. *Section 1. DEFINITION.* Orthopaedic Surgery is that branch of surgery especially concerned with the preservation and restoration of the functions of the skeletal system, its articulations and associated structures.

Article 2. *Section 2. PURPOSES.* To test and determine the qualifications of applicants for registration and to issue certificates to those found qualified.

Section 3. To prepare and maintain a registry of the holders of the certificates issued by the board.

Section 4. To serve the public, physicians, hospitals and medical schools by furnishing lists of those who have received the certificate of the Board, and thus to assist in protecting the public against irresponsible and unqualified practitioners who profess to specialize in orthopaedic surgery.

Article 7. *Section 1. APPLICATION FOR CERTIFICATE.* Each application for a certificate shall be filed with the secretary upon the prescribed form, and shall be accompanied by the fee which the board may fix from time to time. It shall also be accompanied by an unmounted autographed recent photograph of the applicant and the names of two orthopaedic surgeons acceptable to the board, who may be referred to for information in regard to the applicant.

Section 2. The applicant must have the following qualifications:

(a) He must be a graduate of a medical school approved by the Council on Medical Education and Hospitals of the American Medical Association.

(b) He must be of high ethical and professional standing.

(c) He must be a citizen of the United States or Canada.

(d) He must be duly authorized to practice medicine in the state or province of his residence.

(e) He must be a member of the American Medical Association or another society approved by the Council on Medical Education and Hospitals of the American Medical Association.

(f) He must have had one year of internship in a general hospital acceptable to the board.

(g) After Jan. 1, 1940, he must have had three years of concentrated instruction in orthopaedic surgery approved by and acceptable to the board. (A residency of at least two years on an orthopaedic service of a hospital recognized by the Council of the American Medical Association is desirable.)

(h) He must have knowledge of the basic medical sciences related to orthopaedic surgery.

(i) He must have had at least two years' further experience in the actual practice of orthopaedic surgery. Continuation of training (g) beyond the three years required will not be considered as actual practice unless the position of the candidate is considered permanent or his responsibilities equivalent to those encountered in private practice. This means that interns, residents, fellows, graduate students and assistants will not be

credited with additional periods of training unless they are permanent members of the organizations with which they are associated.

(j) He must have limited his work to the field of orthopaedic surgery for at least two years prior to the submission of his application for examination.

(k) In the case of an applicant whose training has been received outside of the United States and Canada, his credentials must be satisfactory to the Council on Medical Education and Hospitals of the American Medical Association and to the National Board of Medical Examiners. In addition, he must have been engaged in the practice of orthopaedic surgery in the United States (or Canada) for at least three years prior to the submission of his application.

Section 3. Each applicant shall be examined and his qualifications determined by the board in such manner as it may designate, and his record shall be reviewed by the board in the light of all assembled information.

Article 8. Section 1. CERTIFICATE. If the applicant be found qualified therefor, a certificate that he has been found by this board qualified to practice orthopaedic surgery shall be issued to him. The certificate shall be in such form as may be adopted by the board, and shall be signed by the officers and members of the board.

EXAMINATION

Examinations will be held once or twice a year. If feasible, these examinations will be in conjunction with meetings of the major orthopaedic societies.

Oral and written examinations will be held on clinical, anatomical and pathological phases of orthopaedic surgery. Anatomical and pathological laboratories and hospital wards will be used when practicable.

APPLICATION FOR CERTIFICATION

Application forms may be obtained from the secretary of the board. These should be filled in accurately and returned not less than ninety days prior to the next examination. An autographed photograph and the fee must accompany the application.

FEES

A fee of \$50 must accompany the completed application form. This fee will be returned only in the cases of candidates found ineligible for examination. Address communications to the secretary-treasurer.

Communications should be addressed to the secretary-treasurer.

AMERICAN BOARD OF OTOLARYNGOLOGY

HARRIS P. MOSHER, President, Boston.

BURT R. SHURLY, Vice President, Detroit.

WILLIAM P. WHERRY, Secretary-Treasurer, 107 South 17th St., Omaha.

BOARD OF DIRECTORS

HARRIS P. MOSHER, Boston.

BURT R. SHURLY, Detroit.

WILLIAM P. WHERRY, Omaha.

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DEAN M. LIERLE, Iowa City.

WILLIAM E. GROVE, Milwaukee.

FRANK R. SPENCER, Boulder, Colo.

ORIGIN, AIMS AND METHODS

SOURCE OF AUTHORITY

In 1916 the American Academy of Ophthalmology and Otolaryngology appointed a committee on examinations, consisting of Drs. Thomas E. Carmody, Harris P. Mosher and Ross Hall Skillern, before whom new members professing otolaryngology as their sovereign work, were to appear to be qualified as such.

In 1924, through the persistent efforts of Dr. George Shambaugh, this activity was enlarged to include representatives from the American Otological Society; the American Laryngological Association; the American Laryngological, Rhinological and Otological Society; the American Academy of Ophthalmology and Otolaryngology; and the Section on Laryngology, Otology and Rhinology of the American Medical Association. Each organization appointed two members, making a total of ten, which constituted the first American Board of Otolaryngology.

Dr. T. H. Halsted of Syracuse, New York, and Dr. H. W. Loeb of St. Louis were appointed to represent the American Otological Society; Dr. H. P. Mosher of Boston and Dr. R. H. Skillern of Philadelphia were appointed to represent the American Laryngological Association; Dr. B. R. Shurly of Detroit and Dr. F. R. Spencer of Boulder, Colorado, to represent the American Laryngological, Rhinological and Otological Society; Dr. T. E. Carmody of Denver and Dr. W. P. Wherry of Omaha to represent the American Academy of Ophthalmology and Otolaryngology; and Dr. J. C. Beck of Chicago and Dr. R. C. Lynch of New Orleans to represent the Section on Laryngology, Otology and Rhinology of the American Medical Association.

CHIEF ACTIVITIES OF THE BOARD

First. To establish standards of fitness to practice otolaryngology.

Second. To arrange, control and conduct examinations to test the qualifications of those who desire to practice otolaryngology and to confer a certificate on those who meet the established standards.

These activities proceed from the object of the corporation which is stated in the Articles of Incorporation to be:

"The object of the corporation shall be to elevate the standard of otolaryngology, to familiarize the public with its aims and ideals, to protect the public against irresponsible and unqualified practitioners, to receive applications for examination in otolaryngology, to conduct examinations of applicants, to issue certificates of qualification in otolaryngology and to perform such duties as will advance the cause of otolaryngology."

NO DEGREES

The conferring of a degree is left to the universities, where it belongs, and the board makes no attempt to control the practice of otolaryngology by efforts to promote any license or legal regulation whatever. It simply aims to establish a standard of fitness to practice otolaryngology, and to certificate those who voluntarily apply and satisfy the board of their qualification.

VALUE OF CERTIFICATE

The five national otolaryngological associations responsible for the organization of the board are sponsoring its activities. Four of these associations require the board certificate from each applicant for membership.

Other important societies and organizations are following the example of these influential organizations. Moreover, the certificate of the board is required of candidates for appointments in many and various important positions in hospitals, colleges, etc. It is expected that the medical public and the lay public will learn to discriminate between those who are well fitted and those who are not, and will be influenced by the certificate of the board in arriving at their conclusions.

CLASSIFICATION OF CANDIDATES

Applicants for examination and for the certificate of the board are divided into classes according to the length of time they have practiced otolaryngology.

(Limited practice in otolaryngology interpreted as 90% otolaryngological practice—ophthalmology excepted.)

Class I—Limited Practice—15 years or more.

Class II—Limited Practice—10 to 15 years.

Class III—Limited Practice—5 to 10 years.

Class IVA—Limited Practice—5 years.

Class IVB—Limited Practice—3 and 4 years.

(Only candidates having completed a satisfactory residency or an acceptable full academic year basic science course are eligible to IVB.)

REQUIREMENTS
UNTIL JAN. 1, 1942

The following general requirements are demanded by the board:

First. A candidate acceptable for the examination must be a graduate from a school approved by the Council on Medical Education and Hospitals of the American Medical Association; furthermore, he must have at least one year of internship in an approved hospital.

Second. Membership in the American Medical Association or, by courtesy, membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association. Except as here provided, membership in other societies should not be required.

Third. In addition, a candidate must have completed at least three years graduate preparation for the specialty, at least one year (more desirably two) in a recognized residency or in basic courses and followed by private practice in otolaryngology.

Fourth. Five years of specialized practice will be accepted in lieu of the requirements of paragraph 3 until Jan. 1, 1942.

Fifth. Application must be made on a special blank procured from the secretary. It must be executed and returned to the secretary, together with other required credentials, sixty days in advance of the examination at which the candidate desires to appear.

Sixth. All applicants must send a small photograph with application and must present themselves in person before the board.

Seventh. Fee for the examination is \$50 and same must accompany application blank. No application will receive consideration until fee is paid.

Eighth. An application remains valid only five years—therefore, an applicant must appear for examination within this time or forfeit fee. The fee under no circumstances is returnable.

If the candidate fails in an examination he will be admitted to a second examination after one year, but within the regulation time limit of his application. Sixty days' notice of intention to appear is required. If a candidate who has failed does not appear before the expiration of validity of his application he will be required to make new application and pay additional fee of \$50 before reexamination.

An applicant having failed twice, must file a new application, pay an additional fee of \$50 and convince the board of additional postgraduate study previous to being assigned appointment for another examination.

Examinations covering two or three days will be held bi-annually at, or near, the time and place of meeting of the American Medical Association, and of the American Academy of Ophthalmology and Otolaryngology.

An extra examination is sometimes held provided the class of applicants is large enough to warrant it.

Candidates are required to sign the following pledge:

I hereby apply to the American Board of Otolaryngology for examination by the said board in accordance with its rules and herewith enclose the fee of fifty (\$50) dollars. I hereby agree that prior to an examination, or subsequent to my examination, the board may investigate my standing and reputation as a physician, including my reputation for complying with the standard of ethics of the profession, and may refuse to examine me, or, having examined me, may refuse a certificate, and such refusal to grant a certificate, whether justified or otherwise, may not and shall not be questioned by me in any court of law or equity or other tribunal, nor shall I have any claim, in the event of such refusal, to a return of the fee accompanying this application.

PRACTICAL EXAMINATION

- 1—Written examinations:
Class III, Class IVA and Class IVB.
- 2—Pathology:
Microscopy—Class IVA, Class IVB.
Gross—Class III, Class IVA and IVB.
- 3—Clinical examination of patients: To include history taking; physical and functional examinations; use of laboratory and x-ray findings; discussion of differential diagnosis; and discussion and defense of his findings, opinion and suggested management.
All classes.
- 4—Didactic examination to be a private, oral examination covering any aspect of otolaryngology and its interrelation with general medicine.
All classes.

Communications should be addressed to the secretary-treasurer.

AMERICAN BOARD OF PATHOLOGY, Inc.

- A. H. SANFORD, President, Rochester, Minn.
FREDERICK H. LAMB, Vice President, Davenport, Iowa.
FRANK W. HARTMAN, Secretary-Treasurer, 2799 W. Grand Blvd., Detroit.
ALVIN G. FOORD, Pasadena, Calif.
N. CHANDLER FOOT, New York.
HOWARD T. KARSNER, Cleveland.
ROY R. KRACKE, Emory University, Ga.
JOSIAH J. MOORE, Chicago.

ORGANIZATION

In June 1935 the Section on Pathology and Physiology of the American Medical Association and the American Society of Clinical Pathologists appointed committees which acted jointly in consideration of the feasibility and necessity of a national qualifying board. The joint committees agreed unanimously that such a board should be established and proceeded to draw up by-laws for such a board. In May 1936 the American Society of Clinical Pathologists and the Section on Pathology and Physiology of the American Medical Association accepted the proposed by-laws, authorized the nomination of four members each to the board and suggested incorporation in the state of Michigan. Approval of the board by the Advisory Board for Medical Specialties and the Council on Medical Education and Hospitals of the American Medical Association was given. On July 19, 1936, the organization of the board was carried out in Chicago.

The officers of the board who were elected at this meeting, were:

- A. H. Sanford, President.
Frederick H. Lamb, Vice President.
F. W. Hartman, Secretary-Treasurer.

Drs. Hartman and Moore of the A. M. A. Section and Drs. Sanford and Lamb of the A. S. C. P., whose terms on the board expired in 1940, were renominated by their respective organizations and were reelected by the board. The president, vice president and secretary-treasurer were also reelected for 1940-1941.

PURPOSES

A. To encourage the study and promote the practice of pathology.

B. To elevate the standards and advance the cause of pathology, by encouraging its study and improving its practice.

C. To determine the competence of those wishing to practice this specialty of pathology and to arrange, conduct, and control investigations and examinations to determine the qualifications of such individuals who voluntarily apply for the certificates issued by the corporation.

D. To grant and issue certificates in the special field of pathology to voluntary applicants therefor and to maintain a registry of holders of such certificates.

E. To serve the public, the medical profession, hospitals, and medical schools by preparing and furnishing lists of specialists who have been certified by the corporation.

VALUE OF THE CERTIFICATE

Judging from the experience of other specialties operating a certifying board it is anticipated that the certificate will be of value in that the medical profession, the lay public, and hospital administrators will utilize certificates from the board as a means of discriminating between those that are thoroughly qualified in pathology and those that are not. Lists of those holding certificates will be made available from time to time by this board through the publication of the same in pamphlets and in national medical journals.

BOARD NOT AN EDUCATIONAL INSTITUTION

The board is in no sense an educational institution and the certificates of the board are not to be considered degrees. Therefore the certificate does not confer on any person legal qualifications, privileges, or license to practice medicine or the specialty of pathology. The board does not purport in any way to interfere with or limit the professional activities of any licensed physician. Its chief aim, as stated above, is to standardize the qualifications for the specialty of pathology and to issue certificates to those voluntarily complying with the requirements of the board.

GENERAL REQUIREMENTS

- A. General qualifications.
 1. Satisfactory moral and ethical standing in the profession.
 2. License to practice medicine.
 3. Membership or associate membership in the American Medical Association or by courtesy membership in such Canadian or other national medical societies as are approved by the Council on Medical Education and Hospitals of the American Medical Association.
 4. That the applicant devotes his time primarily and principally to the practice of pathology.

B. Professional education.*

1. Graduation from a medical school in the United States or Canada, approved by the Council on Medical Education and Hospitals of the American Medical Association.

C. Special training, to be effective after July 1, 1938:

1. Completion of an internship of not less than one year in a hospital approved by the Council on Medical Education and Hospitals of the American Medical Association.

2. A period of study, exclusive of internship, of not less than three calendar years, exclusive of reasonable vacation periods, in an institution or department of pathology recognized by the same Council and the Board of Trustees as competent to provide a satisfactory training in the field of pathology. This period of special training preparation shall include the following:

- (a) Graduate training for one year in the various phases of clinical pathology.

- (b) Training and experience of not less than two years in a department of pathologic anatomy.

- (c) Such training may be combined or in sequence.

3. A fifth year of training or practice in pathology.

D. Special qualifications:

1. The board may accept candidates without special training as outlined in Section C above provided that:

- (a) The candidate shall have been for a period of five years of professional rank in a department of pathology in an approved medical school, or

- (b) The candidate shall have been practicing pathology for ten years in a senior position in a hospital, having an adequate department of pathology, and approved by the Council on Medical Education and Hospitals of the American Medical Association.

Candidates with special qualifications, as outlined in Section D above, may be certified without examination, at the discretion of the board.

APPLICATION BLANK AND FEE

Application must be made on the special form which may be procured from the secretary and forwarded with other required credentials and the application fee. Applications cannot be given consideration by the board unless accompanied by the application fee.

The application or examination fee for candidates is \$35. If certified without examination \$10 of fee will be refunded. If the candidate fails in his examination he will be admitted to a second examination after one year, but not later than three years, without additional fee. After two reexaminations the applicant must file a new application and pay an additional fee before a fourth examination will be given.

The examination fee of \$35 has been arrived at after careful consideration, and is based on actual estimates of the expense of examination and administration. None of the board members receive any compensation for their services except actual expenses incurred.

If the applicant, for any reason, is deemed ineligible for examination by the board his fee will be returned; however, the application fee is not returnable after the candidate has officially been accepted for examination and notified to report for the same.

EXAMINATIONS

Written and oral examinations will be held at or near the time and place of national medical meetings at the discretion of the board. If a number of applications from any region of the country are received an examination in conjunction with a national medical meeting in that section will be arranged so that the financial outlay of the applicant in meeting the examinations will be as small as possible.

The examinations are to be based on the broad principles of pathology with emphasis on diagnosis and interpretation. The

* NOTE: In case of an applicant whose education and/or training has been received outside the United States or Canada, his credentials must be acceptable to the National Board of Medical Examiners and the American Board of Pathology.

applicant may apply for certification in either pathologic anatomy or clinical pathology, or both. These general subjects have been defined in the by-laws as follows:

1. Pathologic anatomy is that branch of pathology which deals with the morphological aspects of disease, recognition being given that this definition covers two phases of pathology.

- (a) The applied phase, with special attention to biopsy description and diagnosis.

- (b) The academic phase of teaching and general morphological diagnosis.

2. Clinical pathology is that branch of pathology which deals with bacteriology, immunology, biochemistry, parasitology, hematology, and clinical microscopy, in relation to the diagnosis, prognosis, and treatment of clinical disease.

All communications should be addressed to the secretary-treasurer.

AMERICAN BOARD OF PEDIATRICS, Inc.

BORDEN S. VEEDER, President, St. Louis.

C. ANDERSON ALDRICH, Secretary-Treasurer, 723 Elm St., Winnetka, Ill.

HORTON CASPARIS, Nashville, Tenn.

FRANKLIN PAUL GENGEBACH, Denver.

CHARLES F. MCKHANN JR., Ann Arbor, Mich.

EDWARD BYER SHAW, San Francisco.

HAROLD COE STUART, Boston.

PHILIP VAN INGEN, New York.

ALFRED AUGUSTUS WALKER, Birmingham, Ala.

ORIGIN

The American Board of Pediatrics was established in June 1933 by joint action of the American Pediatric Society, the American Academy of Pediatrics and the Section on Pediatrics of the American Medical Association after consideration of the report of a committee on pediatrics as a special field of medical practice. The committee recommended that the certification plan adopted and in use in the fields of ophthalmology, otolaryngology, gynecology and obstetrics, and dermatology be adapted to pediatrics. Similar boards have been subsequently formed in all the other special fields.

In order to correlate the activities of the various qualifying boards there has been formed the Advisory Board on Medical Specialties, composed of representatives of all the qualifying boards, including the American Board of Pediatrics, as well as representatives of the Association of American Medical Colleges, the National Board of Medical Examiners, the Federation of State Medical Boards of the U. S. A. and the American Hospital Association.

Any method of certification in any specialty must be national in scope, must in its ultimate analysis be controlled by the men in each special field and must be independent of society membership or affiliation. The American Board of Pediatrics fulfills these three essentials: A uniform standard of competency is set up, the character of which is assured through the affiliation with the Advisory Board on Medical Specialties; the board is controlled by pediatricians, its membership being composed of three men appointed by each of the three national pediatric societies; the board is not a medical society, however, and certification is independent of society affiliation.

FUNCTION

The functions of the board are outlined in the articles of incorporation as follows:

"To encourage the study, improve the practice and elevate the standards of pediatrics; and to grant and issue to physicians, duly licensed by law, certificates or other equivalent recognition of special knowledge in pediatrics."

The board has interpreted this to mean that its efforts to encourage and improve the practice of pediatrics shall be limited to its function of certification of competency in the specialty. Obviously other organizations are better able to further the general improvements in pediatrics.

The board specifically defines its activities as follows:

1. To establish standards by which the competency of men to practice pediatrics may be estimated.

2. To arrange, control and conduct examinations to test the qualifications of those desiring certification as pediatricians.

3. To grant certificates of qualification to those applicants who meet the standards successfully.

The board further feels that in carrying out these activities it is merely acting as the agent of the three societies which appointed its members and initiated the project.

No financial recompense of any kind is made to any member of this board except to cover actual traveling expenses to meet-

ings and examinations. The \$30 fee is fixed below that of any of the similar examining boards of other specialties. In the light of experience of the existing boards it may later be necessary to raise this fee to carry on the work of the board successfully.

CERTIFICATE—NOT A DEGREE

Certificates granted are in no sense degrees, nor do they purport to confer upon any person any legal qualification, privilege or license to practice pediatrics. Neither does the board intend in any way to limit the activities of any licensed physicians. It is merely attempting to standardize qualifications and to issue certificates to those who voluntarily comply with the requirements.

VALUE OF THE CERTIFICATE

It is anticipated that the certificate will become of value in that both the medical and lay public, including hospital directors, will soon utilize the certificate from this board as a means of discriminating between those who are well grounded as pediatricians and those who are not.

A certificate is required as one of the qualifications for new members of the American Academy of Pediatrics. The certificate of the American Board of Pediatrics is recognized by the Council on Medical Education of the American Medical Association. Holders of certificates are so designated in the directory of the American Medical Association.

Lists of those holding certificates will be published by this board from time to time. Such lists will also be published in the leading pediatric journals of the country.

APPLICANTS FOR CERTIFICATES

Requirements for Applicants.—Each applicant for a certificate must establish in a manner satisfactory to the board that he is of high ethical and professional standing, is a graduate of a medical school which is satisfactory to the board, and has received adequate training in pediatrics as a specialty in addition to passing the examination given by this board.

Applicants must be citizens of the United States, of its dependencies, or of Canada.

Applicants will be divided into two classes, according to the length of time they have been engaged in the specialty.

Following is the classification of applicants for certification. The changes are based upon the experience gained from examination and upon the general requirements as adopted by the Advisory Board of Medical Specialties and the Council on Medical Education and Hospitals of the American Medical Association.

Group I.—Physicians who have specialized in pediatrics for ten years or more. After July 1, 1943, Group I will be abolished.

The minimum requirements for *Group II* are as follows: Graduate of a Class A medical school.

One year's intern service in a recognized hospital.

Two years' service in a pediatric center.*

An additional term of two years of specialized study and/or practice.

The board defines service in a pediatric center as full time devoted to rounded experience in an acceptable hospital or a graduate course, which includes ward and outpatient service and both therapeutic and preventive pediatrics. The time served in pediatric centers need not be continuous or spent in the same institution. In the case of a post-graduate course an academic year will meet the requirement of one year's work.

The application fee is \$30 and must be remitted with the application. Refund will be made only if the applicant is refused examination. The applicant who has failed in an examination will not be required to pay a second fee if he takes another examination after the lapse of two years.

Application must be made on special blanks which may be secured from the secretary. These must be sent to the secretary at least four months before the date at which the candidate expects to take the examinations.

Letters from two competent pediatricians recommending each applicant must be sent to the secretary of the board. These letters are not to accompany the application, but should be sent directly to the secretary. No member of the board may recommend any applicant.

INFORMATION CONCERNING EXAMINATIONS

Examinations will be held at or near the time and place of meetings of the American Medical Association and of the American Academy of Pediatrics, or at other times and places at the discretion of the board, depending on the number of applicants from any region of the country. It is proposed to arrange examinations in different cities so that as little financial burden as possible will be placed upon the applicants in meeting the examiners.

* A maximum of six months of this time may be spent in full time contagious work in a recognized hospital.

The purpose of these examinations is to determine the applicant's competency to practice pediatrics. This board feels that the best impression of an applicant's ability can be obtained by oral examination although written ones may be substituted at times. It is not proposed at the present time to require the applicant to send in case reports. The board feels that growth and development are fundamental parts of pediatric training.†

A list of papers or books published must be sent with the application blank.

Further information as to the scope of the examinations will be published as soon as available. It should be emphasized that competency in the practice rather than in the theory of pediatrics is required.

Communications should be addressed to the secretary.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY, Inc.

H. DOUGLAS SINGER, President, Chicago.

C. MACFIE CAMPBELL, Vice President, Boston.

WALTER FREEMAN, Secretary-Treasurer, 1028 Connecticut Ave., N.W., Washington, D. C.

LOUIS CASAMAJOR, New York.

FRANKLIN G. EBAUGH, Denver.

HANS H. REESE, Madison, Wis.

TITUS H. HARRIS, Galveston, Texas.

NOLAN D. C. LEWIS, New York.

EDWARD A. STRECKER, Philadelphia.

HENRY W. WOLTMAN, Rochester, Minn.

TRACY J. PUTNAM, New York.

LLOYD H. ZIEGLER, Wauwatosa, Wis.

HISTORY AND STATEMENT OF PRINCIPLES

The American Board of Psychiatry and Neurology was founded in 1934 following conferences of committees appointed by the American Psychiatric Association, the American Neurological Association, and the Section on Nervous and Mental Diseases of the American Medical Association. This action was taken in response to a widespread desire among specialists in psychiatry and neurology for some means of distinguishing the fully qualified specialist from the would-be specialist of inferior training and inadequate experience. That this desire is by no means limited to those who practice psychiatry and neurology is indicated by the formation of corresponding boards covering internal medicine, surgery, and the major specialties. The success of this method of distinguishing the specialists is indicated by the increasing number of candidates taking the examinations, and by the listing accorded in the American Medical Directory to those specialists holding the certificates of the various boards.

CONSTITUTION AND ACTIVITIES

The American Board of Psychiatry and Neurology is composed of twelve members, four each from the American Neurological Association and from the American Psychiatric Association and two neurologists and two psychiatrists elected by the Section on Nervous and Mental Diseases of the American Medical Association. Annual elections to fill the places of members whose terms have expired take place in each of the nominating associations with the understanding that neurology and psychiatry are always equally represented on the board. The board holds annual meetings in December of each year for the transaction of whatever business may come before it and also holds special meetings for the purpose of examining candidates and of passing upon the qualifications of those seeking the certificate without examination.

FUNCTIONS

(a) To determine the competence of specialists in psychiatry and neurology.

(b) To arrange, control and conduct investigations and examinations to test the qualifications of voluntary candidates for certificates issued by the board.

(c) To grant and issue certificates or other recognition of special knowledge in the field of psychiatry and neurology to successful voluntary applicants therefor.

(d) To serve the public, physicians, hospitals and medical schools by preparing lists of practitioners who shall have been certified by the board.

(e) To consider and advise as to any course of study and technical training, and to diffuse any information calculated to promote and ensure the fitness of persons desirous of qualifying for a certificate of qualification to be issued thereby.

† The three volumes on Growth and Development of the White House Conference contain this material. Century Company, publishers.

INFORMATION FOR APPLICANTS
EXCERPTS FROM ARTICLE VII OF THE BY-LAWS

SECTION 1. Application for Certificates. Application for certificates shall be considered by the secretary only when made formally on the official application blank in such form as may be adopted from time to time by the board of directors and when accompanied by an application fee in such amount as may be fixed from time to time by the board of directors.

SECTION 2. Form of Certificates. There shall be separate certification in psychiatry and in neurology and two certifications or a combined certification for those qualified in both fields. The certificates shall be in such form as is approved by the board of directors.

SECTION 3. Requirements for Applicants. Each applicant for a certificate must establish that—

(a) He is a physician duly licensed by law to practice medicine.

(b) He is of satisfactory ethical and professional standing.

(c) He is now a member of the American Medical Association, or a member of such medical societies as are recognized for purposes of certification by the Council on Medical Education and Hospitals of the American Medical Association. Exceptions to the foregoing may be made at the discretion of the board for good and sufficient reasons.

(d) He has received adequate training in psychiatry or neurology, or both, as a specialty.

SECTION 4. No candidate is eligible for examination by the board until he has completed at least five years of special training and experience in neurology or psychiatry for a single certificate, or at least six years of training and experience for certification in both neurology and psychiatry.

CLASSES OF APPLICANTS AND FEES

Applicants may request certification in psychiatry, or in neurology, or in both psychiatry and neurology.

Limitation of practice to the specialty of psychiatry and/or neurology need not be complete provided a candidate both by his previous training, experience and standing, and by examination, can prove his competency to practice that specialty.

However, in case a physician has already been certified by one of the other boards as a specialist in another field, he will not be considered for certification in psychiatry and/or neurology except under special circumstances.

Class I

Physicians who graduated from medical school in 1919 or before and who have carried on specialized practice in neurology and/or psychiatry for at least fifteen years are to be considered on their professional record and passed, if satisfactory to the Board, or further evidence of qualification or examination may be required.

A candidate in Class I who has received certification in either psychiatry or neurology may apply within three years for certification in the other field without additional fee. After three years such application shall be considered as a new application with corresponding fees.

When certification in Class I has been refused, the candidate may file application for reconsideration within three years without additional fee. After three years such application for reconsideration shall be considered as a new application with corresponding fees.

Class II

Physicians who graduated from medical school up to and including 1929 and who have practiced the specialty of psychiatry and/or neurology for at least five years will be required to pass an examination in psychiatry or neurology, or both.

Class III

Physicians who graduated after 1929, up to and including 1934, will be required to pass an examination to satisfy the board that they have adequate knowledge of all subjects specified in the by-laws for candidates graduating after 1934. Their previous training and experience must be acceptable to the board.

Class IV

Candidates graduating from medical school after 1934 shall fulfil the preceding general requirements as given in Section 3 of Article VII and the following special requirements:

PROFESSIONAL EDUCATION

(1) Graduation from a medical school approved by the Council on Medical Education and Hospitals of the American Medical Association.

(2) Completion of a general internship of not less than one year in a hospital approved by the same Council.

SPECIAL TRAINING

(These requirements are to be placed in force as soon as practicable after Jan. 1, 1940. In the meantime a syllabus covering the knowledge required of the candidate has been prepared and is available to those who request it.)

Admission to the examination for certification in neurology or psychiatry requires a total experience of not less than five years. This period shall include the following:

1. A period of study, after the general internship, of not less than three full years in institutes, hospitals, clinics, dispensaries, laboratories, and other institutions recognized by the Council of the American Medical Association and approved by the American Board of Psychiatry and Neurology as competent to provide a satisfactory training in psychiatry and/or neurology.

(a) As subject matter,

Neuro-anatomy	Psychobiology
Neurophysiology	Psychopathology
Neuropathology	Neuro-röntgenology
Clinical neurology	Clinical psychiatry

and other basic medical sciences, which, in the opinion of this board, are necessary to the proper understanding and treatment of psychiatric and/or neurologic disorders.

2. An additional period of not less than two years of practice in psychiatry and/or neurology.

3. Candidates wishing to be admitted to the examinations for certification in both fields must have had a minimum of six years of experience in both fields.

PAYMENT OF FEES

The candidate on filing his application shall accompany it with an application fee of \$25. When notified by the Secretary that he is eligible for examination he shall send the examination fee of \$25 to the secretary at least two weeks before the date of the examination. The certification fee of \$25 is payable upon notification by the board that certification has been awarded the candidate in Class I on his record. No fees will be returned.

The same examination is given whether a candidate applies for certification in psychiatry, or in neurology, or in both psychiatry and neurology. The board requires some proficiency in neurology on the part of those it certifies in psychiatry and vice versa, but judges the candidate in accordance with the certificate he seeks.

Should a candidate receive certification in either psychiatry or neurology, he may apply within three years for partial examination for the certificate in the complementary subject, upon payment of a complementary examination fee of \$10. After three years, the second application shall be considered a new application, with corresponding \$25 fees.

EXAMINATIONS

Date and places of examination are set by the board at its discretion and are announced in *The Journal of the American Medical Association*, in the *American Journal of Psychiatry*, in the *Journal of Nervous and Mental Disease*, and in the *Archives of Neurology and Psychiatry*.

The examinations are designed to test the ability of the candidates to meet the situations in which they might at any time be called upon as specialists to assume responsibility. They will be of such a type that no adequately trained individual will fail, yet they will be sufficiently searching so that the specialist-in-fact will be separated from the specialist-in-name. Each candidate is required to identify and to discuss the function of the more important anatomic structures in the brain and spinal cord, to discuss gross and microscopic pathologic specimens and to interpret roentgenograms dealing with neurologic disorders. He is examined orally on the subjects of psychobiology and psychopathology. These examinations in the preclinical subjects usually last about two hours. Each candidate examines two patients with neurologic disorders and two with psychiatric disorders, and discusses with the examiners the various problems involved. One hour, on the average, is allotted to each of these four clinical examinations. The manner of examining both neurologic and psychiatric patients and the reasoning and deductions therefrom constitute the most important part of the examination. Some acquaintance with the history of psychiatry and neurology, with the body of doctrine, and with the recent advances, is presupposed.

REEXAMINATIONS

A candidate who has failed in one examination is eligible to reexamination in the whole subject, within three years, on payment of a reexamination fee of \$10. A candidate who has failed in one examination and who does not apply for reexamination within three years or a person who has applied within that time but who has failed a second time will be considered

a new applicant, with corresponding \$25 fees. The \$10 reexamination fee also applies to candidates conditioned in one or more subjects at any time within three years of the first examination, and is payable before each reexamination.

HANDLING OF APPLICATIONS

An application, in order to be considered at any meeting, must be in the hands of the secretary of the board not less than seventy days before the date of such meeting.

The secretary of the board on receipt of an application shall forthwith make inquiries from those to whom the candidate refers and from such other persons as the secretary may deem desirable and shall verify the candidate's record from the biographical records of the American Medical Association, after which he shall forward the application to the committee on credentials. This committee shall consider the application and other information available and notify the secretary whether the application is accepted. The certification of a candidate in either psychiatry or neurology, or both, shall be approved by a majority of the members of the entire Board at any meeting held for such certification.

PLEDGE

Each candidate is required to sign the following pledge:

"I hereby make application to the American Board of Psychiatry and Neurology, Incorporated, for the issuance to me of a certificate of qualification as a specialist in (a) Psychiatry; (b) Neurology; (c) Psychiatry and Neurology (check the one desired) and for examination relative thereto, all in accordance with and subject to its rules and regulations. Upon the issuance of the certificate I agree to and do become bound by the by-laws of the American Board of Psychiatry and Neurology, Inc., insofar as applicable.

"I agree to disqualification from examination or from the issuance of a certificate of qualification or to forfeiture and redelivery of such certificate of qualification in the event that any of the rules governing such examination are violated by me or for any one of the reasons set forth in the by-laws. I agree to hold said American Board of Psychiatry and Neurology, Inc., its members, examiners, officers and agents, free from any damage or claim for damage or complaint by reason of any action they, or any of them, may take in connection with this application, such examination, the grade or grades given with respect to any examination, and/or the failure of said corporation to issue to me such certificate of qualification."

RULES AND REGULATIONS

(ART. VII, SEC. 5, OF THE BY-LAWS)

The board of directors, from time to time, by resolution adopted by the affirmative vote of a majority then in office, may adopt, amend and repeal rules and regulations respecting requirements of applicants, the nature and extent of examinations and investigations and issuance of certificates.

REVOCATION OF CERTIFICATES

(ART. VII, SEC. 6, OF THE BY-LAWS)

All certificates issued by the corporation shall be issued subject to the provisions of the certificate of incorporation and of the by-laws of the American Board of Psychiatry and Neurology, Inc. Each such certificate shall be subject to revocation in the event that:

(a) The issuance of such certificate or its receipt by the physician shall have been contrary to or in violation of any of the provisions of the corporation's certificate of incorporation or by-laws; or

(b) The physician so certified shall not have been eligible in fact to receive such certificate, irrespective of whether or not the facts constituting him so ineligible were known to any or all of the directors of the corporation or could have been ascertained by any or all of the directors of the corporation at the time of the issuance of such certificate; or

(c) The physician so certified shall have made any deliberate misstatement of fact in his application for such certificate or in any other statement or representation to the corporation, its directors, representatives or agents; or

(d) The physician so certified shall have been convicted by a court of competent jurisdiction of a felony or of any misdemeanor involving, in the opinion of the board of directors of the corporation, moral turpitude in connection with his practice of medicine; or

(e) The physician so certified shall have had his license to practice medicine revoked or shall have been disciplined or censured as a physician by any court or other body having proper jurisdiction and authority.

FORM OF CERTIFICATE

The secretary shall have prepared subject to the approval of the board members a form of certificate containing the following wording:

THE AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY, INC.

This is to certify that.....has satisfied the requirements of the board and is hereby certified as qualified to practice the specialty of Psychiatry and/or Neurology.

(Signed) President.....
Vice President.....
Secretary

Communications should be addressed to the secretary.

AMERICAN BOARD OF RADIOLOGY, Inc.

G. W. HOLMES, President, Boston.

J. W. PIERSON, Vice President, Baltimore.
BYRL R. KIRKLIN, Secretary-Treasurer, 102 Second Avenue,
S.W., Rochester, Minn.

A. C. CHRISTIE, Washington, D. C.

E. C. ERNST, St. Louis.

E. L. JENKINSON, Chicago.

L. C. KINNEY, San Diego, Calif.

U. V. PORTMANN, Cleveland.

DOUGLAS QUICK, New York.

LEROY SANTE, St. Louis.

E. H. SKINNER, Kansas City, Mo.

ALBERT SOILAND, Los Angeles.

M. C. SOSMAN, Boston.

R. H. STEVENS, Detroit.

B. P. WIDMANN, Philadelphia.

HISTORY AND AUTHORITY FOR ORGANIZATION

The medical profession has long felt that there should be a standard of minimal requirements for the practice of any specialty in medicine in order to protect the public, the profession in general, and the specialists themselves. Some of the states have attempted by statute to prescribe such requirements in certain branches. Unless a better method of regulation were found, the other states would be likely to enact similar laws. The result would be forty-eight different standards for each of the many medical specialties. Obviously, a more practicable solution would be for each special group to put its own house in order and place its mark of approval on those qualified to practice as specialists in that particular field. Accordingly, in 1932, five nation-wide radiologic organizations, the Section on Radiology of the American Medical Association, the American Roentgen Ray Society, the Radiological Society of North America, the American College of Radiology, and the American Radium Society, each appointed a committee of three members to confer and investigate the feasibility of establishing a qualifying board. The following men were appointed by these five organizations: Drs. G. W. Holmes, J. W. Pierson, E. L. Jenkinson, W. E. Chamberlain, E. C. Ernst, W. F. Manges, L. R. Sante, L. C. Kinney, A. C. Christie, Albert Soiland, W. W. Wasson, Henry Schmitz, Lester Hollander, Rollin H. Stevens and B. R. Kirklin.

This combined committee met at Milwaukee in 1933, during the meeting of the American Medical Association, agreed unanimously that such a board should be established and so reported to the respective organizations. Each of the organizations approved the report, appointed three representatives, and empowered them to proceed to the formation of a national radiologic board. The members of the board thus chosen were: Drs. W. F. Manges, L. R. Sante and B. R. Kirklin, representing the American Roentgen Ray Society; Drs. A. C. Christie, E. C. Ernst and E. L. Jenkinson (succeeding Dr. Byron H. Jackson, originally appointed) representing the American College of Radiology; Drs. R. H. Stevens, Henry Schmitz and H. K. Pancoast, representing the American Radium Society; Drs. L. J. Menville, M. C. Sosman and Albert Soiland, representing the Radiological Society of North America, and Drs. L. C. Kinney, J. W. Pierson and G. W. Holmes, representing the Section on Radiology of the American Medical Association.

The board was incorporated, organized and held its first meeting in Washington, D. C., in May 1934; at that time the by-laws were adopted and provision was made by resolution for its proper function. The officers of the board elected at this meeting were:

Dr. H. K. Pancoast, President.

Dr. A. C. Christie, Vice President

Dr. B. R. Kirklin, Secretary-Treasurer.

This move put into action the determined effort on the part of these five national organizations to improve the standards of the practice of radiology. It expects to accomplish this by various activities, such as the investigation and encouragement

of facilities for graduate extension study and active clinical assistantships for men desiring to specialize in radiology; it will endeavor by regular examinations to determine the competence of specialists in radiology who apply for the certificate.

During 1935 the American Board of Radiology was accepted for membership in the Advisory Board for Medical Specialties and was also approved by the Council on Medical Education and Hospitals of the American Medical Association. Hereafter the list of Diplomates of the Board will take the place of the Council's list of approved radiologists, and the latter list will be discontinued.

PURPOSES

First: To encourage the study and promote and regulate the practice of radiology.

Second: To elevate the standards and advance the cause of radiology by encouraging its study and improving its practice.

Third: To determine the competence of specialists in radiology; to arrange, control and conduct investigations and examinations; and to test the qualifications of voluntary candidates for certificates to be issued by the board.

Fourth: To serve the public, physicians, hospitals and medical schools by preparing lists of practitioners who shall have been certified by the board.

VALUE OF CERTIFICATE

The national radiologic organizations which have participated in the formation of the board and are sponsoring its activities, as well as other organizations, attach considerable importance to its certificate. It is expected that both the medical and the lay public, including hospital directors, will soon come to utilize the certificate from this board as a means of discriminating between those who are well grounded as specialists in radiology and those who are not.

To this end lists of those holding certificates from this board will be published and issued from time to time by the board. Similar lists will be published by the *American Journal of Roentgenology and Radium Therapy*, *Radiology*, and *The Journal of the American Medical Association*. The Directory of the American Medical Association will indicate by a numerical symbol in the biographic data of those whose names are eligible to appear on these lists that they are diplomates of this board.

For emphasis it is repeated that the board does not intend in any way to interfere with or limit the professional activities of any duly licensed physician, but it does aim toward standardized qualifications for those who claim to be specialists in radiology.

CERTIFICATES

A certificate will be issued to each candidate who meets the requirements of the board, to the effect that the holder of the certificate has had adequate training in radiology and has successfully fulfilled the requirements of the board.

A certificate granted by this board does not of itself confer, or purport to confer, any degree, or legal qualifications, privileges, or license to practice radiology. Certificates of the board shall be issued upon one of two forms:

1. A certificate to the effect that the applicant has been found qualified to practice radiology in all its branches.

2. A certificate to the effect that the applicant has been found qualified to practice radiology in one or more of the following special fields: (a) roentgenology; (b) diagnostic roentgenology; (c) therapeutic radiology.

DEFINITIONS

For the purposes of this board, the following definitions are adopted:

1. Radiology is that branch of medicine which deals with the diagnostic and therapeutic application of radiant energy including roentgen rays and radium.

2. Roentgenology is that branch of radiology which deals with diagnostic and therapeutic application of roentgen rays.

3. Diagnostic roentgenology is that branch of radiology which deals with the diagnostic application of roentgen rays.

4. Therapeutic radiology is that branch of radiology which deals with the therapeutic application of roentgen rays and radium.

GENERAL REQUIREMENTS

Each applicant for admission to the examination shall be required to present evidence that he has met the following standards:

(A) General Qualifications.*

(1) Satisfactory moral and ethical standing in the profession.

(2) A license to practice medicine.

(3) Membership in the American Medical Association, or, by courtesy, membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association.

(4) That the applicant holds himself out to be a specialist in radiology or one of its branches as defined under definitions, and that he uses roentgen rays or roentgen rays and radium either personally or under his direct supervision in a substantial portion of his practice.

(B) Professional Education.*

(1) Graduation from a medical school of the United States or Canada, recognized by the Council on Medical Education and Hospitals of the American Medical Association.

(2) Completion of an internship of not less than one year in a hospital approved by the same council.

(3) Three years' training in radiology or sufficient experience in lieu thereof.

(C) Special Training.* (To be effective Jan. 1, 1942.)

(1) A period of study after the internship of not less than three calendar years in an institution or radiologic department recognized by the same council and the board as competent to provide a satisfactory training in the field of radiology.

(2) This period of specialized preparation shall include:

(a) Graduate training in pathologic anatomy, radiophysics, and radiobiology.

(b) An active experience of not less than twenty-four months in a radiologic department recognized by the board and the council as capable of providing satisfactory training.

(c) Examination in the basic sciences of radiology as well as in the clinical aspects thereof.

APPLICATIONS

The board desires to appraise the candidate's educational opportunities (premedical, medical and radiologic), the ability of his instructors, his hospital and teaching positions, his original investigations, his contributions to radiologic literature, his membership in medical societies, and his local and general reputation.

For this purpose, application must be made on a special blank which may be obtained from the secretary. No application will be considered unless made on the regular application blank. This application shall be forwarded with the required data, two unmounted photographs, and the fee of \$35, at least two months before the date of the examination.

FEE

A fee of \$35 must accompany each application blank. This fee will not be returned and no application will be considered until the fee is received. This fee has been carefully computed and is used entirely for administrative purposes. Members of the board and special examiners do not receive any compensation except for actual expenses connected with holding the examinations. As the number of candidates decreases, it may become necessary to raise the fee.

Checks should be made payable to the American Board of Radiology.

EXAMINATIONS

Each year the board will hold an examination in conjunction with the annual meeting of the American Medical Association, and, when sufficient applications are on file, a second examination will be held in conjunction with the annual meeting of the American Roentgen Ray Society and/or the Radiological Society of North America.

For the present, examinations consist of practical and oral examinations, although written examinations may be added later. The examinations are designed to test the candidate's fitness to practice radiology or one of its branches as a specialty. The board will endeavor to adapt this examination to the candidate's experience and years of practice. It will try especially to ascertain the breadth of his clinical experience, his knowledge of the basic sciences of radiology, and likewise his knowledge of the recent literature on radiology, and his general qualifications as a specialist in this branch of medicine.

The examination consists of tests in film interpretation and an oral examination in pathology, physiology, radiophysics and radiobiology, as well as the clinical applications of roentgen rays and radium. The applicant is also examined in "professional adaptability," in an attempt to ascertain his attitude toward his fellow practitioners and his patients.

* NOTE: In case of an applicant whose training has been received outside of the United States and Canada, the credentials must be satisfactory to the Advisory Board for Medical Specialties.

Whenever an applicant fails to pass the examination, the board, if requested, will make suggestions as to suitable courses of instruction for the purpose of overcoming his deficiencies.

REEXAMINATIONS

If the candidate fails in an examination he will be admitted to a second examination after one year has elapsed but not more than three years. He must give sixty days' notice of his intention to appear for reexamination and pay an additional fee of \$15. If a candidate who has failed does not appear for reexamination before the expiration of three years, he will be required to make a new application and pay an additional fee of \$35.

A candidate having failed twice must file a new application and pay an additional fee of \$35.

FINAL ACTION OF THE BOARD

The final action of the board is based on the applicant's professional record, training, and attainments in the field of radiology, as well as on the results of his examination. Any radiologist who is practicing radiology honorably and efficiently should have no difficulty in obtaining a certificate. This board has been organized, not to prevent qualified radiologists from obtaining certificates, but to assist them in becoming recognized in their communities as men competent to practice in the special field of radiology.

REVOCATION OF CERTIFICATES

Certificates issued by this board are subject to the provisions of the Articles of Incorporation and the By-Laws. According to Article IX, Section 4, of the By-Laws "Any certificate issued by the Board of Trustees shall be subject to revocation in the event that:

(a) The issuance of such certificate or its receipt by the physician so certified shall have been contrary to or in violation of any provision of the Certificate of Incorporation of this the American Board of Radiology or of these by-laws; or

(b) The physician or party so certified shall not have been eligible in fact to receive such certificate; or

(c) The physician or party so certified shall have made any mis-statement of fact in his application or in any other communication to the board or its representatives; or

(d) The physician or party so certified shall have been convicted by a court of competent jurisdiction of a felony or of any misdemeanor involving, in the opinion of the Board of Trustees, moral turpitude; or

(e) If the physician or party so certified shall have had his license to practice medicine revoked or shall have been expelled from one of the societies or organizations which is represented by this corporation through eligibility of such society or organization to nominate and appoint members of this corporation."

Communications should be addressed to the secretary.

AMERICAN BOARD OF SURGERY, Inc.

EVARTS A. GRAHAM, Chairman, St. Louis.

ALLEN O. WHIPPLE, Vice Chairman, New York.

J. STEWART RODMAN, Secretary-Treasurer, 225 South Fifteenth St., Philadelphia.

HOWARD M. CLUTE, Boston.

ARTHUR W. ELTING, Albany, N. Y.

DONALD GUTHRIE, Sayre, Pa.

THOMAS M. JOYCE, Portland, Ore.

THOMAS G. ORR, Kansas City, Kan.

ROBERT L. PAYNE, Norfolk, Va.

FRED W. RANKIN, Lexington, Ky.

ERWIN R. SCHMIDT, Madison, Wis.

HARVEY B. STONE, Baltimore.

PHILEMON E. TRUESDALE, Fall River, Mass.

HISTORY

The organization of the American Board of Surgery was completed on Jan. 9, 1937. A plan for this organization had been carefully studied by a general committee representative of certain general and sectional surgical societies called together through the initiative of the American Surgical Association. As a result of the deliberations of this general committee a tentative plan of organization was adopted. This plan was reported to the cooperating surgical societies and was approved with the understanding that the board, when organized, would have the power to change or modify the proposed plan as it

saw fit. This board has been created in accordance with the action of the Advisory Board for Medical Specialties as approved by the Council on Medical Education of the A. M. A., which has named twelve specialty fields as being suitable to be represented by such boards. These boards have the two-fold purpose of certifying those found to be qualified after meeting reasonable requirements, and of improving existing opportunities for the training of specialists within the field concerned. This is to be done for the protection of the public and the good of the specialty.

PERSONNEL

* The cooperating surgical societies selected jointly to form the board appointed their representatives as follows:

The American Surgical Association.....	3
The Surgical Section of the A. M. A.....	3
The American College of Surgeons.....	3
The Southern Surgical Association.....	1
The Western Surgical Association.....	1
The Pacific Coast Surgical Association.....	1
The New England Surgical Society.....	1
	<hr/> 13

The term of membership is for six years. Each cooperating association has the appointing power of its representatives subject to the approval of the board.

PURPOSES

(a) To conduct examinations of satisfactory candidates who seek qualification by the Board.

(b) To issue certificates of qualifications to all those meeting the board's requirements.

(c) To improve the opportunities for the training of the surgeon.

REQUIREMENTS

(A) GENERAL QUALIFICATIONS

1. Moral and ethical standing in the profession satisfactory to the board.

The board, believing that the practice of "fee splitting" is pernicious, leading as it does to a traffic in human life, will reserve the right to inquire particularly into any candidate's practice in regard to this question.

2. Membership in the American Medical Association or, by courtesy, membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the A. M. A. Except as here provided, membership in other societies shall not be required.

3. Those who have limited their activities to the practice of surgery.

4. In exceptional instances the board may, in its discretion, accept for examination candidates who have met all preliminary requirements and have been in practice from six to sixteen years but whose formal training does not comply with the full requirements to be exacted in the future.

The board recognizes two groups of candidates who may be eligible for certification.

(A) The Founders Group—those who have already amply demonstrated their fitness as trained specialists in surgery. Application for membership in this group will be open until January 9, 1940. Those who receive the board's approval will be accepted for membership without examination from the following:

1. Those who from the time of the board's organization, January 9, 1937, hold the position of Professor or Associate Professor of Surgery in the approved medical schools of the United States or Canada.

2. Those who for fifteen years prior to the board's organization have limited their practice to surgery and have met the general qualifications required.

3. Such members of the cooperating societies represented on the board, in good standing January 9, 1937, who may be invited to membership in this group.

This group was closed January 1, 1940; no further applications received.

(B) Qualified by examinations—

In addition to the general qualifications the requirements for this group shall be as follows:

(B) PROFESSIONAL STANDING

1. Graduation from a medical school of the United States or Canada recognized by the Council on Medical Education

* The first three of these associations being national in scope, were allotted three representatives each, the remaining associations, one.

and Hospitals of the A. M. A., or graduation from an approved foreign school.

2. Completion of an internship of not less than one year in a hospital approved by the same Council, or its equivalent in the opinion of the board. This internship may be rotating or one devoted to a single branch of medicine as, for example, surgery, medicine, pathology, etc.

(C) SPECIAL TRAINING

After the completion of the year's internship there shall be a period of special training in surgery of not less than five years. During this period one's entire time must be devoted to surgical training supplemented by sufficient experience in the basic sciences to comply with the provisions of Paragraph 2. Such training may be taken in a recognized graduate school of medicine, or as resident in surgery in an acceptable hospital, or under a sponsorship accredited by the American Board of Surgery for such training.* By the latter statement is meant that one may secure the necessary training as an assistant to an accredited surgeon, provided suitable facilities for the education of the candidate are offered. It is understood that the board will accept a combination of training as outlined above.

(For example, one may take a graduate course in an acceptable graduate school for one year, a residency of two years, and an assistantship of two years.)

This period of special training shall be of such character that the relation of the basic sciences of anatomy, physiology, pathology, bacteriology and biochemistry is emphasized. Knowledge of these sciences as applied to clinical surgery will be required in the examination.

Adequate operative experience in which the candidate has assumed the whole responsibility will be required.

The above requirements, especially those referring to surgical training, are subject to change from time to time as the existing opportunities for training in this field of specialization may be broadened.

EXAMINATIONS

The qualifying examination will be divided into Part I (written) and Part II (clinical, bedside and laboratory). In both of these parts a knowledge of the practical application of the sciences fundamental to surgery will be required as previously stated.

PART I

This may be given simultaneously in as many centers as the board may determine suitable for the purpose. A candidate, to be eligible for Part I, must meet all requirements for Group B candidates. A card of admission to this part of the examination will be forwarded to the candidate from the secretary's office, certifying that these requirements have been met, as well as due notice as to the time and place of examination.

The examination in Part I shall cover a one day period. There shall be two sessions of three hours each. This written examination shall concern itself primarily with general surgical problems and in addition the application of the basic sciences of surgery to these problems.

PART II

In order to be eligible for Part II a candidate must have successfully passed Part I, in addition to having met the necessary preliminary requirements and having presented definite evidence of an adequate training in operative surgery satisfactory to the board.

This part of the examination shall be oral and practical and cover a one-day period, the schedule being arranged somewhat as follows:

8-9 A. M.—REGISTRATION

9 A. M.—12 Noon.—Clinical Surgery (diagnosis and management and the application of physiology, biochemistry and bacteriology, as the case being examined on may offer an opportunity for doing so. X-ray plate interpretation will also be included).

2-5 P. M.—Applied anatomy and surgical pathology.

It is probable that for the present this part of the examination can be held in one center or at the most, two. Later, however, as the demand grows, it will be necessary, in all probability, for the board to establish definite subsidiary board centers where this part may be held. At that time it will be necessary that the board appoint subsidiary boards in these centers, consisting of those already qualified as in Group A, to conduct this examination.

* The board makes no attempt to classify hospital residencies, usually accepting those approved by the American College of Surgeons and the Council on Medical Education and Hospitals of the American Medical Association.

GRADES

A candidate must receive a passing average for each part to be entitled to the board's certificate. No candidate shall pass a part who does not receive a grade of 60% or over in each subject of such a part. An average grade of 75% shall be considered as passing in each part. The following values have been assigned to Part II on the basis of the total of 100%; clinical surgery 50%, anatomy 30%, pathology 20%.

A candidate who fails in his examination in Part I shall have his papers reviewed by the examination committee.

REEXAMINATIONS

Candidates may be reexamined as often as they desire provided one year shall elapse between examinations, except that the board may, for good and sufficient reason, deny a candidate the privilege of reexamination.

Candidates shall be required to pay the same fees for Parts I and II at each reexamination in these parts.

FEES

The fee for Group A, Founders Group, shall be \$25.

The fee for Group B shall be \$75, payable as follows: \$5 registration fee, which shall be returned if the candidate is not accepted for examination; \$20 for Part I; and \$50 for Part II.

This board is a non-profit organization. All fees will be used, after a reasonable amount is set aside for necessary expenses in maintaining its office, conducting examinations, etc., to aid in improving existing opportunities for the training of the surgeon.

CERTIFICATE

A certificate attesting to a candidate's qualification in surgery after meeting the requirements will be issued by the board, having been signed by its officers.

REVOCATION OF CERTIFICATE

Any certificate issued by the board shall be subject to revocation by the board at any time in case it shall determine in its sole judgment that a candidate, who has received a certificate, either was not properly qualified to receive it or has become disqualified since its receipt.

Proper forms for making application, and other information, will be furnished by the secretary-treasurer.

AMERICAN BOARD OF UROLOGY, Inc.

HERMAN L. KRETSCHMER, President, Chicago.

CLARENCE G. BANDLER, Vice President, New York.

GILBERT J. THOMAS, Secretary-Treasurer, 1009 Nicollet Avenue, Minneapolis.

NATHANIEL P. RATHBUN, Brooklyn.

GEORGE GILBERT SMITH, Boston.

CHARLES C. HIGGINS, Cleveland.

HENRY G. BUGBEE, New York.

ALFRED I. FOLSOM, Dallas, Texas.

T. LEON HOWARD, Denver.

ORGANIZATION

At the annual meeting of the American Association of Genito-Urinary Surgeons held at Niagara Falls, Ont., Canada, May 26-28, 1932, Dr. William F. Braasch called attention to the various qualification boards which had been established, or were in the process of being established, for the certification of specialists. He suggested that a committee should be appointed from this organization to investigate the advisability of establishing a similar board for the specialty of urology. A committee consisting of Dr. Braasch as Chairman, Dr. Henry G. Bugbee, and Dr. Hugh H. Young was appointed. This committee reported to the society in 1933, was reappointed to continue its efforts, and was given the power to act.

At the meeting of the American Urological Association in 1933, Dr. George R. Livermore, in his presidential address, suggested that all candidates for specialization in urology should have some definite preparation, and should be required to take a thorough examination before being recognized as specialists in urology. Dr. Livermore appointed Dr. Joseph F. McCarthy, chairman; Dr. George Gilbert Smith, and Dr. Herman L. Kretschmer as a committee to study this suggestion.

At the annual meeting of the American Medical Association in Milwaukee, June 12-16, 1933, a committee consisting of Dr.

Montague L. Boyd, chairman; Dr. A. I. Folsom and Dr. Frank Hinman was appointed to cooperate with similar committees from the American Association of Genito-Urinary Surgeons and the American Urological Association in the establishment of the American Board of Urology.

The first combined meeting of the committees from these three organizations was held on Oct. 11, 1933, in Chicago. Dr. Herman L. Kretschmer was made president; Dr. Joseph F. McCarthy, vice president; and Dr. William F. Braasch, secretary. These men were elected to serve as temporary officers. A permanent organization could not be effected, however, because the committee from the American Urological Association had not been given the power to act.

The second meeting of these committees was held in New York City, Feb. 2, 1934. Dr. Nathaniel P. Rathbun, president of the American Urological Association, was present at this meeting.

At the annual meeting of the American Urological Association held in Atlantic City, N. J., May 22-24, 1934, the committee reported the activities of the temporary "Board of Urology." This report, which contained suggestions for the guidance of future committees from this association, was accepted, and a new committee was elected by the association, and was given the power to act.

The permanent "American Board of Urology, Inc." was organized at Chicago, Sept. 24, 1934. The committee members present from the American Association of Genito-Urinary Surgeons were: Dr. William F. Braasch, Dr. Henry G. Bugbee, and Dr. Gilbert J. Thomas; those from the American Urological Association were: Dr. Nathaniel P. Rathbun, Dr. Herman L. Kretschmer, and Dr. George Gilbert Smith; those from the Section on Urology of the American Medical Association were: Dr. A. I. Folsom, Dr. T. Leon Howard, and Dr. Clarence G. Bandler.

The officers of the board elected at this meeting were: Dr. Herman L. Kretschmer, president; Dr. Clarence G. Bandler, vice president; Dr. Gilbert J. Thomas, secretary-treasurer.

The board was incorporated May 6, 1935, and held its first legal meeting May 10, 1935.

PURPOSES

The first objective of the American Board of Urology, Inc., is to render better service to the public by insuring the competence of any physician or surgeon who is specializing, or who wishes to specialize, in the field of urology. It will elevate the standards and advance the cause of urology. It will investigate the curricula of medical schools, and will encourage adequate facilities for graduate instruction in urology.

FUNCTIONS

(a) The board will arrange to control and conduct examinations testing the qualifications of volunteer candidates.

(b) The board will grant and issue certificates or other evidence of special knowledge in the field of urology to voluntary applicants or to candidates for certification.

(c) The board will endeavor to serve the public, hospitals, medical schools, medical societies and practitioners of medicine and surgery by preparing lists of urologists whom it has certified.

LIMITATIONS OF FUNCTIONS

The conferring of degrees, "Doctor of Medicine" or "Bachelor of Medicine" remains with the universities, where it belongs, and this board makes no attempt to control the practice of urology by license, or legal regulations. This board does not intend in any way to interfere with or limit the professional activities of any duly licensed physician.

REASON FOR APPLYING FOR A CERTIFICATE; ITS VALUE

The American Urological Association, the American Association of Genito-Urinary Surgeons, and the Section on Urology of the American Medical Association are interested in furthering the cause of urology and have participated in the formation of this board. They are sponsoring its activities. The various national medical societies, the public, hospital directors and others, will utilize the certification from this board as a means of discriminating between those well grounded as specialists in urology, and those who are not.

Lists of individuals who have certificates from this board, and who are engaged in the practice of urology may be published in the Directory of the American Medical Association and will be published in a booklet issued from time to time by the American Board of Urology, Inc. The directory of the American Medical Association may indicate, by symbols in the

biographical data, those whose names are eligible to appear on the list of diplomates of this board.

Application for this certificate is purely voluntary. There is only one type of certificate. No indication is given as to whether or not the candidate received his certificate with or without examination. All certificates are identical.

The Advisory Board for Medical Specialties working in conjunction with, and reporting to, the Council on Medical Education and Hospitals of the American Medical Association, has set certain standards of preparation for specialization which the American Board of Urology, Inc., wishes to adopt. The advisory board has drawn from the experience of all the present functioning boards, and has been of inestimable assistance in the formulation of the Constitution and By-Laws for the Board of Urology. Other organizations which now successfully operate boards of certification are:

The American Board of Ophthalmology, the American Board of Otolaryngology, the American Board of Obstetrics and Gynecology, the American Board of Dermatology and Syphilology, the American Board of Pediatrics, the American Board of Psychiatry and Neurology, the American Board of Radiology, the American Board of Orthopedic Surgery, the American Board of Internal Medicine, the American Board of Pathology and the American Board of Surgery. Among the organizations cooperating with the Advisory Board for Medical Specialties are: the Association of American Medical Colleges, the American Hospital Association, the Federation of State Medical Boards of the U. S. A., and the National Board of Medical Examiners.

APPLICATION BLANK: REQUIREMENTS FOR ALL APPLICANTS

Application for certification must be made on a special blank. This will be provided by the secretary and must be returned to him accompanied by other required data and credentials, and by \$15 of the examination fee.

Requirements for Applicants. (Article VIII, Section 2, of the By-Laws of the American Board of Urology, Inc.)

Each applicant, before he shall become eligible to take the examination for certification in urology, must:

A. Have graduated from a medical school of the United States or Canada recognized by the Council on Medical Education and Hospitals of the American Medical Association, and must have completed an internship of not less than one year in a hospital approved by the same council. (The former requirement is not applicable to a candidate who graduated from an institution now extinct, or whose graduation occurred before the American Medical Association had prepared a list of accredited medical schools.) All graduates of foreign medical schools must obtain a license in the state in which they propose to practice medicine and the certificate of the National Board of Medical Examiners before making application for certification.

B. Establish in a manner satisfactory to this board that he is a physician duly licensed by law to practice medicine, that he is of high ethical and professional standing and that he has received adequate special training in urology.

The board is attempting to increase and to standardize the facilities for urological training in teaching institutions, so that the expression "special training in Urology" may be interpreted to include:

1. A period of study, after the internship, of not less than three years in clinics, dispensaries, hospitals or laboratories recognized by the Council on Medical Education and Hospitals of the American Medical Association as competent to provide a satisfactory training in the special field of Urology.

This period of specialized preparation should include:

(a) graduate training in anatomy, physiology, pathology, and the other basic medical sciences which are necessary to the proper understanding of the disorders and treatment involved in the specialty of Urology.

(b) an active experience of not less than eighteen months in hospital clinics, dispensaries and diagnostic laboratories recognized by the Council on Medical Education and Hospitals of the American Medical Association as competent in the diagnosis and treatment of urologic conditions.

(c) examinations in the medical sciences basic to the specialty of Urology, as well as in the clinical, laboratory and public health aspects.

2. An additional period of not less than two years in the private practice of urology in the city from which he makes application.

These special requirements conform with the suggestions made by the Council on Medical Education and Hospitals of the American Medical Association.

C. Make application to the American Board of Urology, Inc., whose duty it shall be to investigate the applicant's credentials and make a survey of his character;

D. Assure the board that he is engaged in the practice of urology and that he intends to continue to be so engaged;

E. Membership in the American Medical Association, or comparable national medical society is recommended.

FEE

The examination fee will be \$75. Fifteen dollars must accompany the application. Sixty dollars is to be paid when the applicant is accepted as a candidate for certification. This is the total expense to the candidate. If a candidate fails in his examination, he will be permitted a second examination after one year, or within three years, without additional fee, but he must give sixty days' notice of his intention to appear for reexamination. After an applicant has failed twice, he must file a new application blank accompanied by a second fee. If an applicant is lacking in any of the requirements as stated above, he will be considered ineligible for examination and classification and his fee will be returned. In no other instance, however, will a refund of the examination fee be possible.

REQUIREMENTS FOR CERTIFICATION

According to the By-laws of the American Board of Urology, Inc., applications received from applicants for certification shall be examined by the Credentials Committee and reviewed by the board. When additional data are required to complete the application, these will be requested by the secretary's office.

The requirements for certification include: personal appearance before the board; preparation of fifty case reports of major urological cases under the candidate's own supervision which must contain all items essential for diagnosis, therapy, prognosis, results of treatment, etc.; oral and clinical examinations; written examinations.

In specific instances, the board may waive any part of these requirements, with the exception of the item of personal appearance.

Each candidate will receive a notice of the time and place of the examinations, and an appointment for his personal appearance before the board.

EXAMINATIONS, WHERE HELD, AND REPORTS OF CASE HISTORIES

The board will hold one examination a year. This will be held at a time or place that the board may select or deem expedient.

1. The *written examinations* are designed to test the candidate's preparation in, and his knowledge of, the whole subject of urology, including the fundamental subjects: pathology, anatomy, physiology, embryology, bacteriology, physiological chemistry and endocrinology. The examination in pathology will consist of the identification of gross specimens and of sections of tissue observed through the microscope. The examination in anatomy, physiology, embryology, bacteriology, physiological chemistry, and endocrinology will be a test of the candidate's working knowledge of these subjects as they are related to the practice of urology.

2. The oral and clinical examinations will consist of discussions of common urologic conditions. The subjects forming the basis of the oral examinations are urography, diseases of the genital organs, including the prostate, diseases of the urinary bladder, and diseases of the ureters and kidneys. The oral examination may deal directly with the reports of case histories which the candidate has submitted. This examination will ascertain the candidate's familiarity with recent urologic literature, the breadth of his clinical experience, and his general qualifications as a specialist in urology. The applicant also will be examined in "professional adaptability" in an attempt to ascertain his attitude toward his fellow practitioners and his patients.

3. The *reports of fifty major urological cases* must be consecutive and must have been under the candidate's own supervision. They must not be abstracted. Sufficient data should appear in these so the examiner will know that a proper history was taken and that a thorough examination, including a complete physical survey, was made.

Case reports that are copied verbatim from a hospital record are not desired. They must be identified by the name of the hospital and the case admission numbers, with the pertinent dates. The reports must be typewritten (preferably on 8½ by 11 paper) and in duplicate, but need not be on any special forms.

The data should be placed under proper headings and the arrangement of these should conform to the sequence of events incidental to the patient's admission to the hospital or clinic, the examinations made and treatment prescribed.

Each candidate must assume personal responsibility for the data in his case reports, including autopsy findings and interpretations of urograms. If the reports are prepared by record clerks, interns, or fellows, they should be reviewed by the candidate and careful attention given to the spelling and the correct use of medical terms before submitting them to the secretary of the board. Case reports are documentary evidence of a can-

didate's method of practice, and the data in them and the manner in which these are presented reflect this.

Satisfactory case reports must be submitted before a candidate will be permitted to continue with other parts of his examination. If case reports are pronounced unsatisfactory by more than one examiner, the candidate will be informed of this and requested to prepare others. Criticisms and unsatisfactory reports will be sent to the candidate upon request.

Case reports must be submitted to the secretary of the board at least ninety days before the time set for the oral-clinical examination.

Although the board requires that all the essential points of the history and examination be given, as well as a complete description of the surgical procedure, emphasis should be placed on the following items: preoperative diagnosis; clinical and pathological diagnosis; summary of postoperative course with special reference to morbidity; clinical findings at time of discharge from the hospital and subsequent "follow-up" reports.

A final short paragraph must be prepared for each case by the candidate. These data must include the candidate's interpretation of the history in terms of pathology; the basis for the diagnosis; the facts that determined the treatment prescribed, whether surgical or otherwise; the course of treatment to be pursued following discharge from the hospital or clinic; a critical discussion of the knowledge gained from the proper handling of the case, or from the errors made (if any) in the diagnosis and method of treatment.

Complete separate index lists of the case history reports submitted must accompany the records. If the reports are obtained from more than one hospital they must be consecutive, as mentioned before, and a separate complete index list of each group of reports should be provided. These lists must state the operator's name at the head of each page, the name of the patient, the hospital and admission number, and the date of operation. The lists will be filed in the secretary's office for verification purposes.

Case reports will be reviewed by examiners living in localities other than those where the candidates practice.

FINAL ACTION

Final action is based on the applicant's training, his professional record, his attainments in the field of urology, and the results of the examinations. Any well trained urologist will have no difficulty in obtaining the board's certification. This board is organized not to prevent qualified urologists from obtaining certificates, but to assist them in becoming recognized in their communities as men competent to practice in the special field of urology.

The activities described in Articles IX and X of this pamphlet proceed from the certificate of incorporation in which is stated the nature of the business, objects, and purposes proposed to be transacted and carried out by this corporation.

REVOCATION OF CERTIFICATE

Certificates issued by this board are subject to the provisions of the Articles of Incorporation and the By-laws. According to Article IX, Section 4, of the By-laws, "each certificate may be revoked in the event that:

(a) The issuance of such certificate or its receipt by the physician so certified shall have been contrary to, or in violation of, any provision of the Certificate of Incorporation of this, the American Board of Urology, Inc., or of the By-laws; or

(b) The physician or party certified shall not have been eligible to receive such certificate, irrespective of whether or not the facts constituting him so ineligible were known to, or could have been ascertained by, the directors of the board at the time of the issuance of such certificate; or

(c) The physician or party so certified shall have made any misstatement of fact in his application for such certificate or in any other statement or representation to the board or its representatives; or

(d) The physician so certified, at any time while continuing to practice, shall cease to practice urology; or

(e) The physician so certified shall at any time have neglected to maintain the degree of competency in the practice of the specialty of urology as set up by the board, and shall refuse to submit to reexamination by the board.

The Board of Trustees of this Corporation shall have the sole power, jurisdiction and right, to determine and decide whether or not the evidence or information before it is sufficient to constitute one of the grounds for revocation of any certificate issued by this corporation, and the decision of such Board of Trustees in the premises shall be final."

Communications should be addressed to the secretary-treasurer.

THE AMERICAN BOARD OF PLASTIC SURGERY, INC.

A SUBSIDIARY OF THE AMERICAN BOARD OF SURGERY

JOHN STAIGE DAVIS, Chairman, Baltimore.
GEORGE M. DORRANCE, Vice-Chairman, Philadelphia.
VILRAY P. BLAIR, Secretary-Treasurer, 400 Metropolitan Building, St. Louis.
CONRAD BERENS, New York.
JAMES BARRETT BROWN, St. Louis.
ROBERT H. IVY, Philadelphia.
HAROLD L. D. KIRKHAM, Houston, Texas.
WILLIAM S. KISKADDEN, Los Angeles.
SUMNER L. KOCH, Chicago.
WILLIAM E. LADD, Boston.
GORDON B. NEW, Rochester, Minn.
GEORGE WARREN PIERCE, San Francisco.
ERNEST FULTON RISON, Toronto, Ontario.
FERRIS SMITH, Grand Rapids, Mich.
JEROME P. WEBSTER, New York.

HISTORY

The aim of the American Board of Plastic Surgery is much the same as that outlined by the American Board of Surgery, namely, "to support a movement which it believes will ultimately raise the standards of qualified surgeons in this country and aid in improving opportunities for the training of the surgeon." A specific purpose of the board is to certify those plastic surgeons found to be qualified, after meeting reasonable requirements, for the protection of the public and the good of the specialty.

PURPOSES

The purposes of the board are:

1. To elevate and establish standards of fitness to practice plastic surgery.
2. To arrange and conduct examinations to test the qualifications of those who practice plastic surgery and to confer certificates upon those who meet the standards established by the board.
3. To improve and widen the existing opportunities for the training of the plastic surgeon.
4. To study and evaluate local and foreign teaching centers and opportunities for experience in and the study of plastic surgery.

REQUIREMENTS

1. Moral and ethical standing in the profession satisfactory to the board.
2. Membership in the American Medical Association or, by courtesy, membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association. Except as here provided, membership in other societies shall not be required.
3. Those who are adequately trained for and are doing acceptable work in the practice of plastic surgery in any field.
4. In exceptional instances the board may, in its discretion, accept for examination candidates who have met all preliminary requirements and have been in practice from six to sixteen years but whose formal training does not comply with the full requirements to be exacted in the future.

The board recognizes two groups of candidates who may be eligible for certification.

(A) The Founders Group—those who have already amply demonstrated their fitness as trained specialists in plastic surgery. Candidates from this group on invitation by the board, and those who voluntarily request, may make application, and on approval by the board and by the American Board of Surgery will be accepted without examination as qualified.

(B) Those qualified by examination.

PROFESSIONAL STANDING

1. Graduation from a medical school of the United States or Canada recognized by the Council on Medical Education and Hospitals of the American Medical Association or graduation from an approved foreign school.
2. Completion of an internship of not less than one year in a hospital approved by the said Council, or its equivalent, in the opinion of the board.
3. For all candidates applying for certification by this board in one or more special fields, preliminary certification from the certifying board or boards of these individual specialties shall be considered essential. For all candidates applying for certification in the general field of plastic surgery, preliminary certification by the American Board of Surgery will be essential, except as noted in paragraph (4) under Requirements.

SPECIAL TRAINING

For certification in the general field of plastic surgery, the following special training shall be required: A period of graduate study in surgery of not less than five years beyond the intern year, two years of which shall be devoted to plastic surgery, to be taken in a recognized graduate school or hospital, or under a sponsorship accredited by both the American Board of Surgery and the American Board of Plastic Surgery. This period of special training shall cover the technical and clinical phases of plastic surgery and the basic sciences of anatomy, physiology, pathology, bacteriology and biochemistry as they are related to plastic surgery. For candidates seeking certification in the general field of plastic surgery, this latter basic part of the preparatory work shall be approved by the American Board of Surgery before the candidate is eligible for examination by the American Board of Plastic Surgery.

For candidates for certification in special fields, preliminary certification by the related special board shall be accepted as evidence of basic training in that specialty, but shall not be accepted as evidence of adequate training in the conduct of anesthesia, control of hemorrhage, treatment of shock, in bacteriology, and in the care of surgical infection and accidents.

EXAMINATIONS

The qualifying examination will be divided into Part I, written, and Part II, oral and practical.

Nature of Examinations.—For the general plastic group, Part I shall consist of a written examination given by the American Board of Surgery. The examination of candidates in special fields without preliminary certification by the American Board of Surgery shall include questions upon the management of local and general anesthesia, shock, hemorrhage, surgical pathology, the handling of tissues and related bacteriology, surgical complications, etc., this examination to be given by the American Board of Plastic Surgery.

Part II as it applies to the general plastic field shall be that as conducted by the American Board of Surgery, it being understood that the clinical part of the examination shall be conducted by examiners appointed by the American Board of Plastic Surgery.

The clinical examination by the American Board of Plastic Surgery shall include any or all of the following:

- (a) The exhibition of patients who have undergone or are undergoing treatment.
- (b) Examination, diagnosis and presentation of a plan of correction by the applicant of cases provided by the examiners.
- (c) Oral examination of the applicant and observations made in the operating room, treatment rooms and wards.

In order to be eligible for Part II of the examination, a candidate must have successfully passed Part I.

GRADES

A candidate shall be required to receive a passing average for each part in order to receive the board's certificate. No candidate shall pass Part I or Part II of the examination who does not receive a grade of 60 per cent or over in each subject of such a part. An average grade of 75 per cent shall be considered as passing.

REEXAMINATIONS

Candidates may be reexamined as often as they desire, provided that one year shall elapse between examinations, except in such cases as the board may, for good and sufficient reason, deny a candidate the privilege of reexamination. Candidates shall be required to pay the fee for either Part I or Part II previous to each reexamination in these parts.

FEES

The fee for Group A (Founders' Group) shall be \$25.

The fee for Group B shall be \$75, payable as follows: \$25 on registration; \$25 for Part I of the examination, of which \$10 shall go to the American Board of Surgery; \$25 for Part II of the examination.

There shall be no refunds.

CERTIFICATE

A certificate attesting to a candidate's qualifications in plastic surgery after meeting the requirements will be issued by the board, having been signed by its officers.

REVOCATION OF CERTIFICATE

Any certificate issued by the board shall be subject to revocation by the board at any time in case it shall determine in its sole judgment that a candidate who has received a certificate either was not properly qualified to receive it or has become disqualified since its receipt.

Proper forms for making application and other information will be furnished by the secretary-treasurer.

AMERICAN BOARD OF NEUROLOGICAL SURGERY, INC.

HOWARD C. NAFFZIGER, Chairman, San Francisco.
ALFRED W. ADSON, Vice-Chairman, Rochester, Minn.
R. GLEN SPURLING, Secretary-Treasurer, 404 Brown Building, Louisville, Ky.
PAUL C. BUCY, Chicago.
WINCHELL MC.K. CRAIG, Rochester, Minn.
LEO M. DAVIDOFF, Brooklyn.
LOYAL DAVIS, Chicago.
TEMPLE S. FAY, Philadelphia.
MAX M. PEET, Ann Arbor, Mich.
TRACY J. PUTNAM, New York.
ERNEST SACHS, St. Louis, Mo.
BYRON STOOKEY, New York.

ORGANIZATION

Recognizing the need for detailed training and special qualifications for the practice of neurological surgery, representatives of both the Society of Neurological Surgeons and the Harvey Cushing Society held an informal meeting in Chicago on March 27, 1939, to consider the advisability of the formation of a national certification board. Later the group was enlarged by representatives from the Section on Nervous and Mental Diseases of the American Medical Association, the Section on Surgery of the American Medical Association, the American Neurological Association, and the American College of Surgeons. Approval of the board by the Advisory Board for Medical Specialties and the Council on Medical Education and Hospitals of the American Medical Association was given. The American Board of Neurological Surgery was incorporated in the State of Delaware on Aug. 1, 1940.

The membership of the corporation was nominated as follows: five from the Society of Neurological Surgeons, three from the Harvey Cushing Society, one each from the American College of Surgeons, the Section on Nervous and Mental Disease of the American Medical Association, the Section on Surgery of the American Medical Association, and the American Neurological Association.

PURPOSES

A. To encourage the study, improve the practice, elevate the standards and advance the science of neurological surgery and thereby to serve the cause of public health.

B. To grant and issue to physicians duly licensed by law, certificates or other recognition of special knowledge in neurological surgery and to suspend and revoke the same.

C. Certificates granted or issued by the corporation shall not confer or purport to confer on any person any legal qualification, privilege or license to practice neurological surgery, nor purport to be issued under or in pursuance to or by virtue of any statutory or governmental sanction or authority.

D. To determine by examination, investigation and otherwise the fitness and competence of specialists in neurological surgery who shall apply for certificates and to prepare, provide, control and conduct examinations, written, oral and otherwise, for such purpose and to determine the results of such examination.

E. To furnish to the public, hospitals, medical schools, medical societies and practitioners of medicine and surgery lists of neurological surgeons who from time to time have been granted certificates by this corporation.

GENERAL REQUIREMENTS

A. General qualifications.

1. Satisfactory moral and ethical standing in the profession.

2. License to practice medicine.

3. Membership in the American Medical Association or, by courtesy, membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association.

4. That the surgical activity of the applicant shall be limited to neurological surgery.

B. Professional education.

1. Graduation from a medical school of the United States or Canada recognized by the Council on Medical Education and Hospitals of the American Medical Association, or graduation from a foreign school which is acceptable to the American Board of Neurological Surgery, Inc.

C. Special training, to be effective Jan. 1, 1940.

1. Completion of a surgical internship of not less than one year in a hospital approved by the Council on Medical Education and Hospitals of the American Medical Association, or its equivalent in the opinion of the board.

2. A period of graduate study in a recognized graduate school of medicine of not less than three years beyond the intern year, or in an approved hospital or under a sponsorship acceptable to the American Board of Neurological Surgery, Inc., for the training of neurological surgeons. This period of special training shall be of such a character that the relation of the basic sciences of anatomy, physiology, pathology, bacteriology and biochemistry is emphasized. Knowledge of these sciences as applied to the practice of neurological surgery will be required in the examination.

3. An additional period of not less than two years in the practice of neurological surgery.

D. Certification without examination.

1. On invitation by the board and written application made within two years from Jan. 1, 1940, the following may be accepted as eligible for certification upon approval of the board of directors and on the production of evidence of satisfactory moral and ethical standing in the profession.

(a) Individuals of professorial rank in approved medical schools of the United States or Canada whose surgical practice is limited to neurological surgery.

(b) Those who have specialized in neurological surgery for ten years prior to Jan. 1, 1940.

APPLICATION BLANK AND FEE

Application must be made on the special form which may be procured from the secretary. The application and examination fee for candidates is \$75 whether certified with or without examination. The completed application form should be returned to the secretary accompanied by an application fee of \$25. When notified by the secretary that he is eligible for examination he shall send the examination fee of \$50 to the secretary-treasurer at least two weeks before the date of examination. The application fee will be returned if the candidate is not accepted by the board for examination.

A candidate who has failed in one examination is eligible to reexamination in the subject, or subjects, in which he failed, within three years, on payment of a reexamination fee of \$10. A candidate who has failed in one examination and who does not apply for reexamination within three years or a person who has applied within that time but who has failed a second time will be considered a new applicant.

EXAMINATIONS

Examinations will be held in the spring and fall of each year at or near the time and place of a national meeting at the discretion of the board. Examinations will be oral and based upon broad principles of neurological surgery. The subject matter of the examination will be divided into six parts: (1) neuroanatomy and neurophysiology, (2) neuropathology and bacteriology, (3) ophthalmology and x-ray diagnosis, (4) neurosurgical problems, (5) organic neurology and (6) general surgery.

The first examination will be held at the Neurological Institute, University of Illinois, 912 South Wood Street, Chicago, on Oct. 18 and 19, 1940.

All communications should be addressed to the secretary-treasurer.

ADVISORY BOARD FOR MEDICAL SPECIALTIES

Organized 1933-1934 to coordinate graduate education and certification of medical specialists in the United States and Canada.

This Board reports directly to its member groups, and functions in close cooperation with the Council on Medical Education and Hospitals of the American Medical Association and with the Advisory Council on Medical Education.

The work of this Board has been aided by grants from the Josiah Macy Jr. Foundation of New York, but the Board is now supported by its component groups.

OFFICERS AND EXECUTIVE COMMITTEE

WILLARD C. RAPPLEYE, President, New York.

WILLIAM P. WHERRY, Vice President, Omaha.

PAUL TITUS, Secretary-Treasurer, 121 South Highland Ave., Pittsburgh.

R. C. BUERKI, Chicago.

W. B. LANCASTER, Boston.

MEMBER ORGANIZATIONS AND REPRESENTATIVES

*(Corresponding Officer)

The Association of American Medical Colleges

STANLEY B. RYERSON, Toronto, Ontario.

*WILLARD C. RAPPLEYE, New York.

The American Hospital Association

*R. C. BUERKI, Chicago.

G. HARVEY AGNEW, Toronto, Ontario.

The Federation of State Medical Boards of the U. S. A.

G. M. WILLIAMSON, Grand Forks, N. D.

*WALTER L. BIERRING, Des Moines, Iowa.

The National Board of Medical Examiners

*J. STEWART RODMAN, Philadelphia.

WALLER S. LEATHERS, Nashville, Tenn.

The American Board of Ophthalmology

WALTER B. LANCASTER, Boston.

*JOHN GREEN, St. Louis.

The American Board of Otolaryngology

HARRIS P. MOSHER, Boston.

*WILLIAM P. WHERRY, Omaha.

The American Board of Obstetrics and Gynecology

JOSEPH L. BAER, Chicago.

*PAUL TITUS, Pittsburgh.

The American Board of Dermatology and Syphilology

HOWARD FOX, New York.

*C. GUY LANE, Boston.

The American Board of Pediatrics

BORDEN S. VEEDER, St. Louis.

*C. ANDERSON ALDRICH, Winnetka, Ill.

The American Board of Psychiatry and Neurology

FRANKLIN G. EBAUGH, Denver.

*WALTER FREEMAN, Washington, D. C.

The American Board of Radiology

A. C. CHRISTIE, Washington, D. C.

*BYRL R. KIRKLIN, Rochester, Minn.

The American Board of Orthopaedic Surgery

WILLIS C. CAMPBELL, Memphis, Tenn.

*FREMONT A. CHANDLER, Chicago.

The American Board of Urology

HERMAN L. KRETSCHMER, Chicago.

*GILBERT J. THOMAS, Minneapolis.

The American Board of Internal Medicine

ERNEST E. IRONS, Chicago.

*WILLIAM S. MIDDLETON, Madison, Wis.

The American Board of Pathology

A. H. SANFORD, Rochester, Minn.

*FRANK W. HARTMAN, Detroit.

The American Board of Surgery

ERWIN R. SCHMIDT, Madison, Wis.

*J. STEWART RODMAN, Philadelphia.

The American Board of Neurological Surgery

HOWARD NAFFZIGER, San Francisco.

*R. GLEN SPURLING, Louisville, Ky.

AFFILIATES OF AMERICAN BOARD OF SURGERY

The American Board of Anesthesiology

HENRY S. RUTH, Merion, Pa.

*PAUL M. WOOD, New York.

The American Board of Plastic Surgery

JOHN STAIGE DAVIS, Baltimore.

*VILRAY P. BLAIR, St. Louis.

MEMBER EMERITUS

LOUIS B. WILSON, Rochester, Minn.

The Advisory Board for Medical Specialties has prepared this booklet for the purpose of furnishing general information regarding its activities in connection with graduate medical education and the certification of medical specialists in the United States and Canada. It is designed also to give detailed information concerning the procedure to be followed by examining boards in the various specialties in order to obtain membership in this Advisory Board and official recognition by the Council on Medical Education and Hospitals of the American Medical Association. This information is based in large part on the experience of previously formed boards during the past twenty-three years.

Examining boards have now been organized, approved, and are actively functioning in the thirteen specialties recognized as suitable fields for the certification of specialists. Two of the

more limited specialties, namely, anesthesiology and plastic surgery have examining boards as affiliates of the American Board of Surgery.

The Committee on Standards and Examinations of the Advisory Board and the Council on Medical Education and Hospitals of the American Medical Association express themselves as opposed to the organization of examining boards in any special field having less than one hundred in the United States engaged in the special practice in question.

ORGANIZATION

Several American Boards had been functioning actively and successfully for a number of years prior to the organization of the Advisory Board for Medical Specialties. Their purposes were, primarily, to establish minimum standards of graduate educational and training requirements for physicians representing themselves to the public as being specialists, with certification by the boards of candidates after they had been able successfully to pass the boards' examinations. Secondly, these boards hoped to improve the general standards of graduate medical education and facilities for special training. This aim is being steadily and rapidly accomplished.

Credit for the improvement in undergraduate medical education, so noticeable in this country during the past twenty-five years, is due to the efforts of universities, educational foundations, medical schools, medical societies, and to public support along these lines. The same is true of the present transition in graduate education in the specialties, sharply stimulated by the establishment and activities of these certifying boards.

The American Board of Ophthalmology was the first special certifying board to be created in 1916; the American Board of Otolaryngology, established in 1924, was followed by the American Board of Obstetrics and Gynecology in 1930, and the American Board of Dermatology and Syphilology in 1932.

During part of this period of time plans for the organization of similar boards in other specialties were being actively projected, all of these groups being desirous of availing themselves of the experiences of the already existing boards.

It was soon recognized that some formal and official plan of organization must be established. It was clearly essential that an examining board must have the official sanction of the national societies in its given specialty as well as that of its section of the American Medical Association, but there was, at that time, nothing to prevent unofficial groups from organizing examining boards and using the title American Board.

Consequently, in order to avoid duplication of effort as well as to coordinate the work of the several boards and other interested groups into a concise and homogeneous plan for betterment, it was deemed advisable to create an Advisory Board which should give consideration to those problems common to all, and which should be representative of each organization concerned.

During the years 1933 and 1934 this Advisory Board was organized and began actively to function. Simultaneously at the Milwaukee session of the American Medical Association in 1933 a resolution was adopted authorizing the Council on Medical Education and Hospitals: (1) to formulate standards of administration based in general upon those of the American Boards of Ophthalmology, of Otolaryngology, of Obstetrics and Gynecology, and of Dermatology and Syphilology and, (2) to recognize officially new boards meeting these standards, this recognition to be based upon previous approval and recommendation to the Council by the Advisory Board.

A constitution and by-laws for the Advisory Board was adopted at a meeting in Chicago on February 11, 1934. The original member organizations of the Advisory Board for Medical Specialties were: the Association of American Medical Colleges; the American Hospital Association; the Federation of State Medical Boards of the U. S. A.; the National Board of Medical Examiners; the American Board of Ophthalmology; the American Board of Otolaryngology; the American Board of Obstetrics and Gynecology, and the American Board of Dermatology and Syphilology. Two representatives were appointed from each of these organizations to serve on the Advisory Board. Since that time the American Boards of Pediatrics, of Psychiatry and Neurology, of Radiology, of Orthopaedic Surgery, of Urology, of Pathology, of Internal Medicine, of Surgery, and of Neurological Surgery have been properly organized, approved, and elected to membership in the Advisory Board and recommended to the Council on Medical Education and Hospitals of the American Medical Association for official recognition. The American Board of Surgery now has two affiliate Boards (Anesthesiology and Plastic Surgery) functioning under its general direction and also represented in the Advisory Board.

PURPOSE

Article II of the Constitution states that, "This board shall act in an advisory capacity to such organizations as may seek its advice concerning the coordination of the education and certification of medical specialists." Specifically, this represents an official effort to advance the standards and improve the methods of graduate education and training in the medical specialties, with certification of men thus educated and trained who qualify as specialists in the various branches. The common interest of the member organizations in these purposes is obvious. It is equally apparent that some fixed definition of specialties needed to be established, preferably on a graduate educational basis, that minimum standards of organization and conduct for new examining boards should be fixed, and that some official method of recognition be developed.

There is no desire on the part of these boards to interfere with any practitioners of medicine in any of their regular or legitimate activities. Their fundamental purpose is to ensure to the public, both lay and medical, and for its protection, that physicians claiming to be specialists with presumably special proficiency in one or another branch of medicine actually possess the qualifications they claim. This presupposes special training and demonstrable capability along certain lines of work. Suitable evidence of this is the ability of an individual to satisfy an examining board about his training and then to pass the examination for certification.

The function of each member organization and the relationship of interests will be apparent from a review of the names of these committees and boards.

Preparations for providing medical school and hospital facilities for the required graduate training are going forward actively; surveys of existing facilities for assistant residencies and residencies are being made at the present time in the several specialties; previous activities in the various States respecting the issuance of licenses to specialists are being discussed with a view to their being coordinated with the present activities of the several specialty boards. Several of the American boards, in cooperation with the Council on Medical Education and Hospitals of the American Medical Association, are conducting surveys of institutions providing acceptable residencies and internships.

A Directory of Medical Specialists to include the names and biographic data of all men certified by the several specialty boards, as well as information regarding the organization and functions was published early in 1940. The first edition of the Directory contained the names and brief biographic records, including hospital and teaching appointments of more than 14,000 diplomates or certified specialists, and completely revised editions are to be issued every two years.

The Council on Medical Education and Hospitals of the American Medical Association has agreed, under the authority vested in it by the resolution passed at the Milwaukee meeting (1933) and referred to above, that applications of special examining boards for official approval are to be referred to the Council through the Advisory Board for Medical Specialties, recommendation by the Advisory Board for such approval to be based upon the standards mutually adopted. The understanding exists that the Council cannot be bound by recommendations of the Advisory Board but will consult the Advisory Board for Medical Specialties before acting upon any application so long as mutually adopted standards are in force.

In response to the generally recognized need for a clear formulation of the educational problems and principles involved in graduate and postgraduate medical training, the Advisory Board at its meeting in June 1937 voted to create a Commission on Graduate Medical Education to study the various aspects of the whole problem. This commission includes representatives of the profession, the specialties, the universities, the hospitals, and the licensing bodies. The results of the study contemplated should be of real assistance to the various specialty boards, hospitals, medical schools, and regulatory bodies dealing with this phase of American medicine.

MEMBERSHIP

The Advisory Board is composed of two representatives from each of the approved examining boards in the medical specialties and such other national organizations as are interested in education, examination, and certification of medical specialists and duly elected to this body.

The Constitution provides that, "To be eligible for representation in this board an examining board in a specialty must be composed of members elected from or appointed by societies recognized by this board as a national society in that specialty together with representation from the related section of the

American Medical Association." Upon being accepted by the Advisory Board the Board in question is recommended to the Council on Medical Education and Hospitals of the American Medical Association as qualified for recognition. Membership in the Advisory Board provides for the inclusion of the name of the organization in all lists and directories published by the Advisory Board for Medical Specialties and provides also for publication of the names of specialists certified by each individual examining board.

Meetings of the Advisory Board for Medical Specialties are held annually as required.

Traveling and other expenses of representatives in attendance are borne by member organizations.

ESSENTIALS FOR APPROVED SPECIAL EXAMINING BOARDS

(Adopted by the Advisory Board for Medical Specialties,
June 10, 1934)

I. ORGANIZATION

1. A special examining board to be approved by the Advisory Board for Medical Specialties should represent a recognized and distinct specialty of medicine. (It is agreed between the Council and the Advisory Board that no board shall be organized in a special field having less than one hundred members engaged in special practice in the United States.)

2. It should be composed of representatives of the national organizations in that specialty including the related section of the American Medical Association.

3. It should be incorporated.

4. A special board should:

(a) Determine whether candidates have received adequate preparation.

(b) Provide a comprehensive test of the ability and fitness of such candidates.

(c) Certify to the competence of those physicians who have satisfied its requirements.

II. DEFINITION OF SPECIAL FIELDS

The following branches of medicine at present are recognized as suitable fields for the certification of specialists:

1. Internal Medicine
2. Surgery
3. Pediatrics
4. Obstetrics and Gynecology
5. Ophthalmology
6. Otolaryngology
7. Dermatology and Syphilology
8. Psychiatry and Neurology
9. Urology
10. Orthopaedic Surgery
11. Radiology
12. Pathology

III. QUALIFICATION OF CANDIDATES

Each applicant for admission to the examination should be required to present evidence that he has met the following standards:

A. General Qualifications.

1. Satisfactory moral and ethical standing in the profession.

2. Membership in the American Medical Association or membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association is recommended. Membership in other societies should not be required. (Exceptions to the foregoing may now be made at the discretion of any individual board for good and sufficient reasons.)

B. Professional Standing.

1. Graduation from a medical school of the United States or Canada recognized by the Council on Medical Education and Hospitals of the American Medical Association.

2. Completion of an internship, preferably of the general rotating type, of not less than one year in a hospital approved by the same Council.

C. Special Training.

(To be effective as far as practical not later than January 1, 1942.)

1. A period of study, after the internship, of not less than three years in clinics, dispensaries, hospitals or laboratories recognized by the same Council as competent to provide a satisfactory training in the special field of study.

2. This period of specialized preparation should include:

(a) Graduate training in anatomy, physiology, pathology, and the other basic medical sciences which are necessary to the proper understanding of the specialty in question.

(b) An active experience of not less than eighteen months in hospital clinics, dispensaries and diagnostic laboratories recognized by the Council as competent in the specialty.

(c) Examinations in the basic medical sciences of a specialty as well as in the clinical, laboratory and public health aspects.

3. An additional period of not less than two years of study and/or practice.

The foregoing report is practically identical with an outline of Essentials for Approved Specialty Boards adopted June 10, 1934, by the Council on Medical Education and Hospitals of the American Medical Association and ratified June 11, 1934, by the House of Delegates of the American Medical Association.

ORGANIZATION OF EXAMINING BOARDS

The foregoing essentials for approved special examining boards and their affiliate boards were followed in the organization of the existing boards.

Official sponsorship of the national societies, and the related section of the American Medical Association, in a specialty organizing an examining board, has included the election or appointment of representatives from each of these national societies to serve on the board as examiners and directors.

Each board was or is incorporated. Each application for organization and approval included:

1. The name of the proposed board.
2. A statement of its method of organization, the sponsoring societies, its list of officers, and the names and addresses of the elected or appointed members of the board, including the societies which each represents.
3. A copy of the tentative constitution and by-laws.
4. A copy of its proposed articles of incorporation.
5. An outline of qualification requirements for applicants.
6. An outline of proposed methods of examination.
7. A copy of the application blank.
8. Any general information or statement of importance.
9. Approximate number of physicians practicing the specialty which the Board represents.

These data are submitted in duplicate to the office of the Secretary of the Advisory Board for Medical Specialties.

An application for election to membership in the Advisory Board and the data listed above are referred immediately for review by the Committee on Standards and Examinations of the Advisory Board. Upon approval by the Committee incorporation is then completed and a statement of this filed with the Secretary. Action on the application will be taken at the succeeding meeting of the Advisory Board for Medical Specialties and each examining Board as elected will be recommended to the Council on Medical Education and Hospitals of the American Medical Association for official recognition. One of the two sets of data submitted is forwarded to the Council on Medical Education and Hospitals of the American Medical Association with the Advisory Board's recommendations. Examination and certification of applicants in the specialty may begin immediately upon the special board being given such approval.

Communications should be addressed to the secretary.

CONSTITUTION AND BY-LAWS

Adopted at Organization Meeting, February 11, 1934

ARTICLE I

NAME

The name of this organization shall be "The Advisory Board for Medical Specialties."

ARTICLE II

PURPOSE

This board shall act in an advisory capacity to such organizations as may seek its advice concerning the coordination of the education and certification of medical specialists. No action taken by this Board shall be binding upon any member organizations.

ARTICLE III

MEMBERSHIP

Section I

This board shall be composed of two representatives from each of the examining boards of the medical specialties and such other national organizations as are interested in education, examination, or certification of medical specialists.

Section II—Original Membership

At the time of the organization, this board shall be composed of representatives from each of the following bodies:

- The American Board of Ophthalmology.
- The American Board of Otolaryngology

- The American Board of Obstetrics and Gynecology
- The American Board of Dermatology and Syphilology
- The Association of American Medical Colleges
- The National Board of Medical Examiners
- The Federation of State Medical Boards of the U. S. A.
- The American Hospital Association

The Council on Medical Education and Hospitals of the American Medical Association

Section III—Additional Membership

To be eligible for representation in this board an examining board in a specialty must be composed of members elected from or appointed by Societies recognized by this Board as National Societies in that specialty together with representation from the related Section of the American Medical Association. Upon being accepted by this Advisory Board the board in question will be recommended to the American Medical Association as being qualified for recognition by that Association.

Section IV—Quorum

A quorum at any meeting shall consist of a majority of the official representatives to the board and at least one-third of the membership organizations shall be represented. Each member organization shall be entitled to two votes.

ARTICLE IV

OFFICERS AND STANDING COMMITTEES

Section I—Officers

The officers of this board shall be (a) President, (b) Vice President, (c) Secretary-Treasurer. These officers shall be elected at the annual meeting each year.

Section II—Standing Committees

The standing committees shall be as follows:

1. The Executive Committee
2. Standards and Examinations
3. Finance

The Executive Committee shall consist of the President, Vice President, Secretary-Treasurer, and two members elected at the annual meetings. No organization should have more than one member on the Executive Committee. The President shall be the Chairman of the Executive Committee. The other standing committees shall be appointed by the President.

ARTICLE V

AMENDMENTS TO THE CONSTITUTION

Amendments to this constitution may be made by a majority vote of the official representatives present at any annual meeting provided that thirty days' notice of the proposed amendment has been given each member of the board.

BY-LAWS

ARTICLE I

DUTIES OF OFFICERS

Section I

The President shall preside at all meetings of the board, shall act as Chairman of the Executive Committee, and shall appoint all other standing committees. He shall call meetings of the Executive Committee at such time and place as may be deemed necessary.

Section II

The Vice President shall assume the duties of the President in his absence.

Section III

The Secretary-Treasurer shall perform the usual duties of this office.

ARTICLE II

EXECUTIVE COMMITTEE

The Executive Committee shall carry out the policies and activities decided upon by the board. It shall have an interim authority to initiate policies subject to approval by the board at the annual or any special meeting. The two elected members shall serve for two years, the terms of office terminating in alternate years.

ARTICLE III

MEETINGS

Section I

There shall be an annual meeting at such time and place as the board may determine. A special meeting may be called by the president upon ten days' notice to all members stating time, place and purpose of such meetings. The Executive Committee may present other business for consideration.

Section II

The Executive Committee shall meet subject to the call of the President.

Section III

Robert's Rules of Order shall be followed except where they conflict with this Constitution and By-Laws.

ARTICLE IV

AMENDMENTS TO THE BY-LAWS

Amendments to these by-laws may be made at any regular or special meeting of the board.

Name of Hospital	Location	Control	Capacity	Percentage of Patients			Type of Internship	Interns Appointed Annually	Length of Service in Months	Service Commences	Admitted Service	Outpatient Service	Autopsy Percentage	Salary per Month	Appointments Made
				Free Care	For Teaching	Total Patients Treated									
ILLINOIS—Continued															
Passavant Memorial Hospital 1+.	Chicago.	NPAssn	220	14	50	5,043	R	9	12	JanAprSept	No	Req	79	No	6moadv
Presbyterian Hospital 1,3+.	Chicago.	Church	412	13	50	11,814	M&S	19	12-20	(n)	No	Op	67	No	Quarterly
Provident Hospital 1+.	Chicago.	NPAssn	160	62	62	4,284	R	7	12	JulySept	No	Req	43	\$10	Jan
Ravenswood Hospital +.	Chicago.	NPAssn	233	3	10	6,002	R	6	12	July	No	None	27	\$25	Jan
Research and Educational Hospital 1+.	Chicago.	State	499	100	100	5,831	R	14	12&18	JanJuly	No	Op	86	No	Dec
St. Anne's Hospital.	Chicago.	Church	300	7	..	7,899	R	8	12	June	No	None	36	\$15	Dec
St. Bernard's Hospital 1.	Chicago.	Church	208	25	25	6,501	R	6	12	July	No	None	24	\$25	Quarterly
St. Elizabeth Hospital.	Chicago.	Church	302	3	15	6,147	R	6	12	July	No	None	30	\$15	Nov
St. Joseph Hospital+.	Chicago.	Church	290	5	50	3,754	R	8	12	July	No	Req	40	No	Varies
St. Luke's Hospital 3+.	Chicago.	NPAssn	659	7	..	12,100	R	16	24	July	No	Req	73	No	Nov
St. Mary of Nazareth Hospital 1.	Chicago.	Church	260	19	32	6,473	R	6	12	July	No	None	25	\$10(o)	Jan
South End Hospital.	Chicago.	Corp	129	10	10	2,903	R	4	12	JanJuly	No	None	35	\$30	Oct
South Shore Hospital.	Chicago.	Corp	150	8	10	2,449	R	3	12	JanJuly	No	None	27	\$10(e)	Jan
Swedish Covenant Hospital 1.	Chicago.	Church	227	2	..	4,689	R	7	12	July	No	Req	26	\$20	Varies
United States Marine Hospital 3.	Chicago.	USPHS	301	100	100	2,788	R	6	12	July	(21)	Op	59	\$62.50	Jan
University Hospital.	Chicago.	NPAssn	121	36	25	4,433	R	4	12	July	No	Req	46	\$15	Nov
University of Chicago Clinics 1,3+.	Chicago.	NPAssn	682	36	100	10,776	S	46	12	JanJuly	No	Req	77	No	NovJuly
Walther Memorial Hospital 1.	Chicago.	Church	236	5	5	4,603	R	6	12	July	No	None	19	\$25	Varies
Washington Boulevard Hospital.	Chicago.	NPAssn	110	15	100	2,201	R	6	18	Quarterly	No	Req	33	No	Quarterly
Wesley Memorial Hospital 1+.	Chicago.	Church	262	15	31	3,232	R	7	12	JanJuly	No	None	58	No	Feb
Women and Children's Hospital 2.	Chicago.	NPAssn	150	19	29	2,442	R	6	12	JanJuly	No	Req	62	No	Nov
Woodlawn Hospital.	Chicago.	NPAssn	107	4	..	3,143	R	5	12	JanJuly	No	None	43	\$25	.....
St. Mary's Hospital 1.	East St. Louis.	Church	295	20	..	5,126	R	6	12	July	No	None	39	\$25	Dec
Evanston Hospital +.	Evanston.	NPAssn	260	16	35	9,221	R	12	18	(n)	No	Req	79	No	SprFall
St. Francis Hospital +.	Evanston.	Church	353	4	100	9,202	R	9	12	July	No	None	44	\$20(d)	Nov
Little Company of Mary Hospital.	Evergreen Park.	Church	207	3	70	5,455	R	5	12	July	No	None	24	\$25	Nov
St. Joseph's Hospital.	Joliet.	Church	264	10	75	5,561	R	6	12	July	No	None	33	\$30	Nov
Moline Public Hospital 1.	Moline.	City	169	5	90	4,195	R	3	12	JanJuly	(22)	Req	25	\$25(e)	SprFall
Oak Park Hospital 1.	Oak Park.	Church	170	3	3	4,750	R	6	12	July	No	None	26	\$35	Jan
West Suburban Hospital.	Oak Park.	NPAssn	412	7	..	8,842	R	12	12	AprilJuly	No	Req	37	No	6moadv
Methodist Hospital of Central Illinois +.	Peoria.	Church	240	5	..	6,226	R	12	12	July	No	None	32	\$25	Jan
St. Francis Hospital 1.	Peoria.	Church	402	3	18	9,255	R	8	12	JanJuly	No	None	27	\$25	Nov
St. Mary's Hospital.	Quincy.	Church	215	46	..	4,425	R	3	12	July	No	None	26	\$25	Jan
St. Anthony Hospital.	Rockford.	Church	261	10	..	4,959	R	4	12	July	(23)	None	33	\$25	Dec
St. Anthony's Hospital.	Rock Island.	Church	224	33	80	2,724	R	2	12	July	No	Op	32	\$25(h)	Jan
INDIANA															
St. Catherine's Hospital.	East Chicago.	Church	312	18	..	5,810	R	7	12	July	No	None	16	\$25	Jan
Lutheran Hospital.	Fort Wayne.	Church	190	..	..	4,016	R	3	12	July	No	None	23	\$25(p)	Dec
Methodist Hospital 1.	Gary.	Church	115	10	..	3,236	R	3	12	July	No	None	24	\$30	March
St. Mary's Mercy Hospital.	Gary.	Church	252	23	..	7,200	R	8	12	June	No	None	33	\$25	Nov
St. Margaret Hospital.	Hammond.	Church	265	2	..	5,110	R	10	12	July	No	None	27	\$30	Oct
Indianapolis City Hospital 1,3+.	Indianapolis.	City	718	95	95	11,671	R	23	24	July	No	Req	63	\$10	Dec
Indiana University Medical Center 1,3+.	Indianapolis.	State	604	80	83	9,790	R	24	12	July	No	Req	60	\$12.50	Nov
Methodist Hospital+.	Indianapolis.	Church	579	5	75	23,917	R	22	12	July	No	None	32	\$10	Nov
St. Vincent's Hospital.	Indianapolis.	Church	328	..	..	6,873	R	11	12	July	No	None	18	\$15	Dec
Ball Memorial Hospital 1+.	Muncie.	NPAssn	240	..	..	5,101	R	6	12	July	No	None	37	\$30	Dec
Epworth Hospital 1.	South Bend.	NPAssn	192	8	8	4,827	R	4	12	July	No	Req	28	\$35	Feb
St. Joseph's Hospital.	South Bend.	Church	150	43	90	3,661	R	3	12	July	No	Req	29	\$25(p)	Dec
St. Anthony's Hospital 1.	Terre Haute.	Church	197	37	100	3,249	R	3	12	July	No	None	17	\$30	Dec
IOWA															
Mercy Hospital.	Cedar Rapids.	Church	177	..	..	3,236	R	3	12	July	No	Req	25	\$25	Jan
Jennie Edmundson Memorial Hospital.	Council Bluffs.	NPAssn	136	2	..	2,441	R	3	12	July	No	None	20	\$25	Jan
Mercy Hospital.	Council Bluffs.	Church	163	5	100	3,201	R	4	12	July	No	None	27	\$25	Jan
Mercy Hospital.	Davenport.	Church	145	7	..	3,553	R	3	12	July	No	None	19	\$25	Jan
Broadlawn, Polk County Public Hosp. 1	Des Moines.	County	118	95	95	4,917	R	8	12	July	(24)	Req	51	\$40	Nov
Iowa Lutheran Hospital 1.	Des Moines.	Church	145	5	5	4,222	R	4	12	July	(24)	Req	25	\$25(q)	Fall
Iowa Methodist Hospital.	Des Moines.	Church	270	4	..	8,084	R	8	12	July	(24)	Req	53	\$20(r)	Nov
Mercy Hospital 1.	Des Moines.	Church	187	6	6	4,550	R	5	12	July	(24)	Req	25	\$25	Dec
University Hospitals 1,3+.	Iowa City.	State	954	87	95	19,176	R	20	12	July	No	Req	60	\$100 yr	Nov
St. Joseph Mercy Hospital.	Sioux City.	Church	220	..	..	4,357	R	4	12	July	No	Req	34	\$25	Jan
KANSAS															
Providence Hospital.	Kansas City.	Church	125	20	..	3,074	R	3	12	July	No	None	55	\$35	Fall
St. Margaret's Hospital.	Kansas City.	Church	250	24	60	4,380	R	6	12	July	No	Req	59	\$25	Nov
University of Kansas Hospital 1+.	Kansas City.	State	350	56	84	5,862	R	10	12	July	(25)	Req	70	\$15	Fall
St. Francis Hospital +.	Wichita.	Church	300	15	..	6,535	R	7	12	July	(26)	Req	53	\$40	Nov
Wesley Hospital.	Wichita.	Church	251	16	10	5,244	R	5	12	July	(27)	Req	26	\$25(o)	Nov
Wichita Hospital.	Wichita.	Church	115	6	2	2,597	R	4	12	July	(26)	Req	45	\$10	Jan
KENTUCKY															
St. Elizabeth Hospital.	Covington.	Church	316	30	30	5,763	R	6	12	July	No	Req	17	\$25	Nov
Good Samaritan Hospital.	Lexington.	Church	246	50	31	6,747	R	6	12	July	No	Req	29	\$25	Dec
St. Joseph Hospital +.	Lexington.	Church	250	12	39	7,429	R	5	12	July	No	Req	38	\$25	Nov
Kentucky Baptist Hospital.	Louisville.	Church	170	..	..	4,523	R	5	12	July	(28)	Req	29	\$25	Jan
Louisville City Hospital 1,3+.	Louisville.	City	587	95	100	12,613	R	18	12	July	(29)	Req	64	\$9.25	NovJan
Norton Memorial Infirmary.	Louisville.	NPAssn	165	6	75	3,379	R	6	12	July	(23)	Req	40	\$20	Varies
St. Anthony's Hospital.	Louisville.	Church	163	15	15	3,203	R	3	12	July	(23)	None	..	\$10.35	Jan
St. Joseph Infirmary+.	Louisville.	Church	303	14	5	6,849	R	8	12	July	(23)	None	27	\$15(d)	Nov
SS. Mary and Elizabeth Hospital.	Louisville.	Church	175	15	..	4,523	R	3	12	July	No	None	16	\$10	Dec
LOUISIANA															
Charity Hospital 1,3+.	New Orleans.	State	3,063	100	100	61,856	R	170	12	July	No	Req	43	\$10	Nov
Hotel Dieu Sisters Hospital.	New Orleans.	Church	269	5	..	10,145	R	10	12	July	No	None	25	\$25	Dec
Mercy Hospital—Soulat Memorial.	New Orleans.	Church	150	..	..	3,358	R	4	12	July	No	Req	25	\$25	Dec
Southern Baptist Hospital +.	New Orleans.	Church	275	9	..	11,503	R	10	12	July	No	None	33	\$20	Dec
Touro Infirmary 1+.	New Orleans.	NPAssn	440	35	35	11,911	R	21	12	July	No	Req	48	\$10	Nov

Name of Hospital	Location	Control	Capacity	Percent- age of Patients			Type of Internship	Interns Appointed Annually	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month	Appointments Made	
				Free Care	For Teaching	Total Patients Treated										
LOUISIANA—Continued																
United States Marine Hospital ³	New Orleans.....	USPHS	573	100	100	4,319	R	12	12	July	(30)	Req	39	\$62.50	Jan	
Highland Sanitarium.....	Shreveport.....	Corp	118	15	15	3,374	R	4	12	July	No	None	26	\$50	April	
North Louisiana Sanitarium.....	Shreveport.....	Corp	110	12	100	2,610	R	3	12	July	(31)	Req	45	\$50	Jan	
T. E. Schumpert Memorial Sanitarium.....	Shreveport.....	Church	148	25	..	3,234	R	12	12	July	No	None	41	\$50	March	
Shreveport Charity Hospital.....	Shreveport.....	State	875	100	100	28,455	R	30	12	July	No	None	29	\$10	Nov	
Tri-State Hospital.....	Shreveport.....	Corp	110	2	75	3,852	R	8	12	July	No	None	31	\$50	Jan	
MAINE																
Eastern Maine General Hospital ¹	Bangor.....	NPAasn	173	26	26	4,416	R	4	12	July	No	Req	22	\$25	Nov	
Central Maine General Hospital.....	Lewiston.....	NPAasn	227	49	49	3,504	R	6	12	July	No	Op	53	No	Nov	
St. Mary's General Hospital ¹	Lewiston.....	Church	162	15	46	3,458	R	4	12	July	No	None	25	\$20	Oct	
Maine General Hospital.....	Portland.....	NPAasn	281	44	54	6,515	R	6	18	Jan/July	No	Req	39	No	Nov	
MARYLAND																
Baltimore City Hospitals ^{1,3,4}	Baltimore.....	City	1,345	92	100	8,631	R&S	45	12	July	No	Req	43	No	Nov	
Bon Secours Hospital ^{1,2}	Baltimore.....	Church	175	12	9	3,305	R	4	12	July	No	Req	30	\$15	Nov	
Church Home and Infirmary ^{1,2}	Baltimore.....	Church	178	22	..	3,241	R&S	7	12	July	No	Req	53	\$15	Nov	
Franklin Square Hospital ¹	Baltimore.....	NPAasn	232	37	..	3,470	R&S	8	12	July	No	Req	28	\$10(d)	Dec	
Hospital for Women ^{1,2}	Baltimore.....	NPAasn	160	18	38	2,384	R	5	12	July	No	Req	33	No	Dec	
Johns Hopkins Hospital ^{1,3,4}	Baltimore.....	NPAasn	945	45	67	17,458	S&M	68	12	July/Sept	No	Req	71	No	Dec	
Maryland General Hospital ^{3,4}	Baltimore.....	Church	260	33	*	4,590	R	9	12	July	No	Req	23	\$10	Nov	
Mercy Hospital ¹	Baltimore.....	Church	325	35	49	9,045	R	10	12	July	No	Req	40	No	Nov	
Provident Hospital and Free Dispensary ¹	Baltimore.....	NPAasn	138	72	79	1,896	R	6	12	July/Oct	No	Req	20	\$10	Jan	
St. Agnes' Hospital ¹	Baltimore.....	Church	246	31	50	3,856	R	5	12	July	(32)	Req	25	No	Nov	
St. Joseph's Hospital ¹	Baltimore.....	Church	281	40	48	5,813	R	8	12	July	No	Req	30	\$10	Dec	
Sinai Hospital ^{3,4}	Baltimore.....	NPAasn	233	34	100	5,661	S&M	21	12	July	No	Req	37	No	Jan	
South Baltimore General Hospital ¹	Baltimore.....	NPAasn	175	41	41	3,014	R	6	12	July	(33)	Req	27	\$20	Dec	
Union Memorial Hospital ¹	Baltimore.....	NPAasn	352	15	..	6,547	R	16	12	July	No	Req	42	No	Nov	
United States Marine Hospital ¹	Baltimore.....	USPHS	500	100	100	5,110	R	12	12	July	(34)	Op	67	\$62.50	Jan	
University Hospital ^{1,3,4}	Baltimore.....	State	450	50	70	9,281	R	15	24	July	(35)	Req	62	No	Dec	
West Baltimore General Hospital ¹	Baltimore.....	Corp	200	30	30	3,600	R	7	12	July	(36)	Req	42	\$15	Nov	
MASSACHUSETTS																
Beverly Hospital ¹	Beverly.....	NPAasn	141	2	100	3,328	R	4	12	July/Sept	No	Req	72	No	.....
Beth Israel Hospital ¹	Boston.....	NPAasn	220	21	..	6,199	S	11	12-22	Varies	No	Req	49	No	Jan	
Boston City Hospital ^{1,3,4}	Boston.....	City	2,513	89	89	42,903	S	95	Varies	Varies	No	Req	38	No	Jan	
Carney Hospital ¹	Boston.....	Church	210	6	74	4,716	S	6	16&24	Jan/May/Sept	No	Req	28	No	Jan	
Faulkner Hospital.....	Boston.....	NPAasn	165	23	*	3,943	R	3	12	June/Oct	No	Req	55	No	Jan	
Massachusetts General Hospital ^{1,3,4}	Boston.....	NPAasn	452	48	..	7,220	S	25	12-25	Varies	No	Req	42	No	Jan	
Massachusetts Memorial Hospitals ^{1,3,4}	Boston.....	NPAasn	437	31	65	7,572	R&S	10	12-24	Mar/July-Nov	(37)	Req	63	No	Dec	
New England Hospital for Women and Children ²	Boston.....	NPAasn	260	1	55	5,445	R	8	12	July/Oct	No	Req	37	No	Nov	
Peter Bent Brigham Hospital ^{3,4}	Boston.....	NPAasn	250	..	..	5,190	S	21	12-29	(n)	(38)	Req	66	No	.....
St. Elizabeth's Hospital.....	Boston.....	Church	300	..	..	4,958	R	4	21	Quarterly	No	Req	19	No	Varies
Brookton Hospital.....	Brookton.....	NPAasn	155	3	68	3,062	R	4	12	June-Aug	No	Req	42	\$10(e)	Jan	
Cambridge City Hospital.....	Cambridge.....	City	440	65	80	6,206	R	6	26	(n)	No	Req	31	No	July	
Cambridge Hospital ¹	Cambridge.....	NPAasn	278	11	30	5,056	R&S	5	18	Quarterly	(39)	Req	40	No	Dec	
Chelsea Memorial Hospital.....	Chelsea.....	Corp	110	40	72	2,370	R	2	12	July/Nov	No	None	33	\$20	Jan	
United States Naval Hospital.....	Chelsea.....	Navy	335	90	..	2,778	R	..	12	July	..	None	48	\$62.50	.....
Union Hospital.....	Fall River.....	NPAasn	202	5	50	2,407	R	3	12	July	No	Req	19	\$25	April	
Burlbank Hospital.....	Fitchburg.....	Corp	236	49	60	4,108	R	4	12	July/Oct	No	Req	26	\$25	Nov	
Haverhill Municipal Hospital (Hale).....	Haverhill.....	City	208	47	50	4,885	R	2	12	July	No	Req	22	\$10	Jan	
Holyoke Hospital.....	Holyoke.....	NPAasn	168	4	..	2,450	R	3	12	July	No	Req	17	\$25	Dec	
Providence Hospital.....	Holyoke.....	Church	200	10	85	5,882	R	4	12	June	No	Req	16	\$25	Dec	
Lawrence General Hospital.....	Lawrence.....	NPAasn	142	17	46	3,624	R	3	12	July	No	Op	29	\$10	Feb	
Lowell General Hospital.....	Lowell.....	NPAasn	188	14	50	3,373	R	3	12	July/Oct	No	Req	25	\$25	Dec	
St. John's Hospital.....	Lowell.....	Church	204	25	..	3,996	R	4	12	July	No	Req	19	\$100 yr	Jan	
St. Joseph's Hospital.....	Lowell.....	Church	154	6	..	3,275	R	3	12	June	No	Req	26	\$10(s)	Jan	
Lynn Hospital.....	Lynn.....	NPAasn	224	18	55	6,064	R	6	18	Jan/July	No	Req	41	\$25	Dec	
St. Luke's Hospital.....	New Bedford.....	NPAasn	330	10	..	6,450	R	6	12	July	No	Req	32	No	Jan	
Newton Hospital.....	Newton.....	NPAasn	304	23	..	5,963	R	6	12	June	No	Req	48	No	Jan	
House of Mercy Hospital.....	Pittsfield.....	NPAasn	233	9	65	5,568	R	3	12	July	No	Req	24	\$40	March	
St. Luke's Hospital.....	Pittsfield.....	Church	169	4	..	5,201	R	2	12	Jan/June	No	Req	23	\$30	Dec/May	
Quincy City Hospital.....	Quincy.....	City	290	3	33	6,665	R	6	18	Jan/July	(40)	Op	37	\$10	Nov	
Salem Hospital ³	Salem.....	NPAasn	196	21	62	4,711	R	4	12	July/Aug	No	Req	49	\$25	Nov	
Mercy Hospital.....	Springfield.....	Church	365	7	85	5,589	R	6	12	July	No	Req	22	\$25	Nov	
Springfield Hospital.....	Springfield.....	NPAasn	265	7	44	6,223	R	6	18	Jan/July	(41)	Req	27	No	Jan	
Wesson Memorial Hospital ¹	Springfield.....	NPAasn	125	1	..	2,667	R	3	18	Jan/July	(42)	Req	33	\$25	Jan/July	
Waltham Hospital.....	Waltham.....	NPAasn	268	..	..	2,691	R	4	12	July	No	Req	31	\$15(g)	Varies
Memorial Hospital ¹	Worcester.....	NPAasn	215	13	58	6,296	R	10	20	Jan/July	No	Req	51	No	Nov	
St. Vincent Hospital.....	Worcester.....	Church	250	7	24	5,085	R	4	15	Quarterly	No	Req	18	\$20	Jan	
Worcester City Hospital ^{3,4}	Worcester.....	City	540	63	75	11,181	R	10	24	(t)	No	Req	41	No	Nov	
Worcester Hahnemann Hospital.....	Worcester.....	NPAasn	140	22	100	2,557	R	3	12	July	No	None	57	\$35	Jan	
MICHIGAN																
University Hospital ^{1,3,4}	Ann Arbor.....	State	1,360	74	93	23,847	R	35	12	July	No	Req	58	No	Dec	
Lella Y. Post Montgomery Hospital.....	Battle Creek.....	Church	157	17	..	3,713	R	3	12	July	No	Req	40	\$25	Fall	
Mercy Hospital ¹	Bay City.....	Church	140	14	100	4,247	R	3	12	July	No	None	25	\$35	Jan	
City of Detroit Receiving Hospital ¹	Detroit.....	City	632	100	100	20,531	R	28	12	July	(42)	Req	29	\$25	Nov	
Evangelical Deaconess Hospital ¹	Detroit.....	Church	205	3	..	5,437	R	5	12	July	(43)	Op	35	\$20	Nov	
Grace Hospital ^{1,3,4}	Detroit.....	NPAasn	566	31	57	16,270	R	26	12	July/Sept	No	Req	43	\$25	Nov	
Harper Hospital ^{1,2}	Detroit.....	NPAasn	708	12	49	17,089	R	25	12	June	(44)	Op	26	No	Nov	
Henry Ford Hospital ^{3,4}	Detroit.....	NPAasn	616	23	..	11,093	R	25	12	July	(43)	Op	53	\$125(a)	Nov	
Mount Carmel Mercy Hospital.....	Detroit.....	Church	225	5	..	3,625	R	8	12	July	No	Req	41	\$20	Nov	
Providence Hospital ¹	Detroit.....	Church	527	10	..	12,082	R	17	12	July	(45)	None	38	\$20	Dec	
St. Joseph's Mercy Hospital.....	Detroit.....	Church	215	7	7	6,403	R	6	12	July	No	Req	37	\$25	Nov	
St. Mary's Hospital.....	Detroit.....	Church	375	26	32	5,658	R	12	12	July	No	Req	33	\$20	Dec	
Eloise Hospital and Infirmary—William J. Seymour Hospital ¹	Eloise.....	County	1,437	99	99	6,996	R	25	12	July	(43)	Req	33	\$25	Jan	
Hurley Hospital ¹	Flint.....	City	417	..	25	7,822	R	16	12	July	No	None	26	\$200 yr	Nov	
Blodgett Memorial Hospital ^{1,2}	Grand Rapids.....	NPAasn	150	23	23	3,446	R	6	12	Jan/July	(46)	Req	53	\$20	Fall	

Name of Hospital	Location	Control	Capacity	Percentage of Patients			Type of Internship	Interns Appointed Annually	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month	Appointments Made
				Free Care	For Teaching	Total Patients Treated									
MICHIGAN—Continued															
Butterworth Hospital ⁺	Grand Rapids.....	NPAssn	320	10	53	5,076	R	6	12	July	No	None	42	\$20	Nov
St. Mary's Hospital ⁺	Grand Rapids.....	Church	235	25	100	7,954	R	6	12	July	No	Req	39	\$10-30	Nov
Highland Park General Hospital ¹	Highland Park.....	City	190	..	100	4,203	R	7	12	July	No	Req	26	\$25	Dec
W. A. Foote Memorial Hospital ¹	Jackson.....	City	173	2	..	4,731	R	4	12	June	No	Req	45	\$50	Sept
Mercy Hospital ¹	Jackson.....	Church	150	..	..	4,001	R	3	12	July	(47)	None	29	\$20	Dec
Edward W. Sparrow Hospital ¹	Lansing.....	NPAssn	175	2	26	5,272	R	4	12	July	(129)	None	47	\$50	Dec
St. Lawrence Hospital ¹	Lansing.....	Church	175	..	..	4,970	R	4	12	July	(48)	None	50	\$60	Jan
Pontiac General Hospital.....	Pontiac.....	City	138	15	100	4,241	R	6	12	July	(49)	Req	55	\$25	Jan
Saginaw General Hospital.....	Saginaw.....	NPAssn	152	29	100	3,653	R	3	12	July	No	Req	32	\$15	Nov
St. Mary's Hospital.....	Saginaw.....	Church	183	20	..	3,943	R	4	12	July	No	Req	33	\$45	Nov
MINNESOTA															
St. Luke's Hospital ⁺	Duluth.....	NPAssn	270	20	..	6,773	R	9	12	July	(50)	Req	75	\$20	Nov
St. Mary's Hospital.....	Duluth.....	Church	300	25	25	5,917	R	7	12	July	(50)	Req	65	\$20	Nov
Asbury Hospital ¹	Minneapolis.....	Church	140	8	*	4,130	R	3	12	July	No	None	33	Varies	Nov
Fairview Hospital.....	Minneapolis.....	Church	228	10	10	5,217	R	3	12	July	(51)	Req	33	\$25	Nov
Minneapolis General Hospital ^{1,2,3}	Minneapolis.....	City	671	86	*	11,994	R	24	18	JanJuly	No	Req	62	\$7.50	MayNov
Northwestern Hospital ¹	Minneapolis.....	NPAssn	185	10	..	8,073	R	5	12	July	No	None	44	\$25(e)	Nov
St. Barnabas Hospital ¹	Minneapolis.....	NPAssn	163	1	*	6,691	R	4	12	JanAprJuly	No	None	48	\$25(o)	JulyNov
St. Mary's Hospital ¹	Minneapolis.....	Church	255	15	100	5,807	R	6	12	July	No	None	41	\$15(g)	Nov
Swedish Hospital.....	Minneapolis.....	NPAssn	275	2	..	7,401	R	5	12	JanJuly	No	Req	18	\$25	FallSpr
University Hospitals ^{1,2,3}	Minneapolis.....	State	500	75	88	9,530	S	27	12	July	(52)	Req	73	No	Nov
Ancker Hospital ^{2,4}	St. Paul.....	CyCo	906	93	100	10,169	R	32	12	July	No	Req	73	No	Nov
Bethesda Hospital ¹	St. Paul.....	Church	145	1	..	4,683	R	4	12	July	(51)	None	35	\$25	Nov
Charles T. Miller Hospital.....	St. Paul.....	NPAssn	230	26	85	6,414	R	7	12	July	(53)	Req	60	(k)	Dec
St. Joseph's Hospital ¹	St. Paul.....	Church	252	8	45	8,229	R	10	12	July	(54)	Req	43	\$25	Nov
MISSOURI															
St. Louis County Hospital ^{1,2,3}	Clayton.....	County	210	98	98	4,463	R	6	12	July	No	Req	52	\$25	Dec
Kansas City General Hospital ^{3,4}	Kansas City.....	City	600	100	100	12,067	R	23	12	July	(55)	Req	70	\$20	Nov
Kansas City General Hospital No. 2 ¹	Kansas City.....	City	274	100	100	3,651	R	12	12	July	No	Req	61	\$25	May
Menorah Hospital.....	Kansas City.....	NPAssn	173	4	..	3,701	R	5	12	July	No	None	34	\$25	Jan
Research Hospital.....	Kansas City.....	NPAssn	225	3	*	5,163	R	6	12	July	No	None	64	\$25	Nov
St. Joseph Hospital ⁺	Kansas City.....	Church	258	12	100	6,187	R	7	12	June	No	None	72	\$25	Nov
St. Luke's Hospital ⁺	Kansas City.....	Church	261	..	5	5,135	R	6	12	July	No	None	73	\$25	Nov
St. Mary's Hospital ⁺	Kansas City.....	Church	200	16	18	4,393	R	5	12	July	No	None	51	\$25	Dec
Trinity Lutheran Hospital.....	Kansas City.....	Church	136	1	5	3,142	R	4	12	July	No	None	39	\$25(q)	Fall
Missouri Methodist Hospital ¹	St. Joseph.....	Church	170	7	100	4,033	R	4	12	July	No	Req	25	\$50	Dec
St. Joseph's Hospital.....	St. Joseph.....	Church	180	29	100	3,409	R	4	12	July	No	None	26	\$50	Sept
Barnes Hospital ^{1,2}	St. Louis.....	Church	400	9	52	10,091	S	33	12&18	JulyDec	(56)	Req	66	No	Dec
De Paul Hospital ⁺	St. Louis.....	Church	235	24	54	7,429	R	9	12	July	No	Req	31	\$25	Jan
Evangelical Deaconess Home and Hosp... Homer G. Phillips Hospital ^{1,2}	St. Louis..... St. Louis.....	Church..... City.....	209..... 741	3..... 100	..... 100	6,078..... 9,748	R..... R	8..... 30	12..... 12	July..... July	No..... No	None..... Req	30..... 34	\$20(e)..... \$10(h)	Dec..... April
Jewish Hospital ⁺	St. Louis.....	NPAssn	253	24	24	6,653	R	11	12	July	(57)	Req	25	\$15	Nov
Lutheran Hospital.....	St. Louis.....	Church	180	4	..	4,548	R	3	12	July	No	None	27	\$25	Jan
Missouri Baptist Hospital ⁺	St. Louis.....	Church	430	12	..	5,465	R	8	12	July	No	None	21	\$25	Dec
St. Anthony's Hospital.....	St. Louis.....	Church	250	25	90	4,651	R	7	12	July	(58)	Op	22	\$25	Nov
St. John's Hospital.....	St. Louis.....	Church	320	17	17	6,530	R	11	12	July	(59)	Req	20	\$20	Nov
St. Louis City Hospital ^{2,3}	St. Louis.....	City	734	100	100	18,954	R	69	12	July	(60)	Req	56	\$10(h)	Nov
St. Luke's Hospital ⁺	St. Louis.....	Church	206	19	..	4,856	R	9	12	July	(59)	Req	47	\$20	Dec
St. Mary's Group of Hospitals ⁺	St. Louis.....	Church	731	40	100	12,892	R	26	12	July	(112)	Req	53	No	Nov
St. Mary's Infirmary.....	St. Louis.....	Church	150	31	..	1,546	R	3	12	July	No	None	50	...	April
MONTANA															
Murray Hospital.....	Butte.....	Corp	140	..	100	2,479	R	3	12	July	No	Req	37	\$75(k)	June
St. James Hospital.....	Butte.....	Church	201	14	14	2,725	R	3	12	July	No	Req	23	\$50	Jan
NEBRASKA															
Bryan Memorial Hospital ¹	Lincoln.....	Church	120	9	100	2,424	R	3	12	July	No	None	52	\$25	Spring
Lincoln General Hospital ¹	Lincoln.....	City	176	10	20	3,366	R	3	12	July	No	None	31	\$25	Dec
St. Elizabeth Hospital.....	Lincoln.....	Church	200	22	..	4,370	R	4	12	July	No	None	33	\$25	Sept
Bishop Clarkson Memorial Hospital ⁺	Omaha.....	Church	150	3	3	3,531	R	4	12	June	No	None	37	\$25	.....
Creighton Memorial St. Joseph's Hosp. ^{2,3}	Omaha.....	Church	409	10	11	8,451	R	12	12	July	No	Req	30	\$20(d)	Nov
Immanuel Deaconess Institute.....	Omaha.....	Church	146	9	*	4,580	R	4	12	June	No	None	47	\$25	Dec
Nebraska Methodist Episcopal Hospital.....	Omaha.....	Church	194	6	*	4,583	R	5	12	July	No	Op	19	\$25	Jan
St. Catherine's Hospital.....	Omaha.....	Church	175	20	20	3,245	R	4	12	July	No	Op	19	\$25	Dec
University of Nebraska Hospital ⁺	Omaha.....	State	230	100	100	3,439	R	12	12	July	No	Req	81	\$25	Dec
NEW HAMPSHIRE															
Margaret Pillsbury General Hospital.....	Concord.....	NPAssn	152	4	32	2,367	R	2	12	JanJuly	No	Req	41	\$10	Varies
Mary Hitchcock Memorial Hospital ^{1,2}	Hanover.....	NPAssn	196	18	51	4,855	R	6	18-24	Quarterly	No	Req	77	\$100 yr	Nov
NEW JERSEY															
Atlantic City Hospital ⁺	Atlantic City.....	NPAssn	300	72	72	6,836	R	8	12	July	No	Req	42	\$25	Nov
Bayonne Hospital and Dispensary ⁺	Bayonne.....	NPAssn	250	68	..	4,979	R	6	18	Quarterly	No	Req	19	\$25	JanJuly
Cooper Hosp ¹	Camden.....	NPAssn	375	40	..	6,629	R	11	12&24	July	No	Req	25	\$10	Dec
West Jersey.....	Camden.....	NPAssn	300	40	70	5,935	R	8	12	June	No	Req	26	\$25	Nov
East Orange.....	Camden.....	NPAssn	150	25	..	3,238	R	4	12	July	No	Req	21	\$25	July
Alexian Bros. Hosp. (male patients only).....	East Orange.....	NPAssn	165	60	..	2,408	R	3	12	July	(61)	Req	10	\$50	March
Elizabeth General Hosp. and Dispensary.....	Elizabeth.....	NPAssn	226	..	50	6,100	R	5	24	July	No	Req	34	\$15	Oct
St. Elizabeth Hospital.....	Elizabeth.....	Church	262	39	49	4,259	R	8	12	July	No	Req	25	\$15	Nov
Englewood Hospital ^{1,2}	Englewood.....	NPAssn	292	57	..	8,506	R	6	18	JanJuly	No	Req	23	\$20	JanJuly
Hackensack Hospital ¹	Englewood.....	NPAssn	292	57	..	8,506	R	5	24	July	(62)	Req	35	\$25	Fall
Hackensack Hospital ¹	Hackensack.....	NPAssn	292	57	..	8,506	R	10	12&24	July	No	Req	10	\$25	Oct
St. Mary's Hospital.....	Hoboken.....	Church	400	70	70	5,782	R	6	18	JanJuly	No	Req	41	\$25	Dec
Christ Hospital ¹	Jersey City.....	Church	206	29	46	5,246	R	42	12-24	JanJuly	(63)	Req	16	No	Nov
Jersey City Hospital ^{1,2,3}	Jersey City.....	City	900	90	100	17,642	R	4	24	July	(64)	Req	21	\$25	Feb
St. Francis Hospital ¹	Jersey City.....	Church	240	53	50	3,549	R	6	18	JanJuly	(65)	Req	24	\$15	Dec
Monmouth Memorial Hospital ²	Long Branch.....	NPAssn	211	60	100	5,045	R	6	18	JanJuly	(65)	Req	24	\$15	Dec

Name of Hospital	Location	Control	Capacity	Percent- age of Patients			Type of Internship	Interns Appointed Annually	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month	Appointments Made	
				Free	For Teaching	Total Patients Treated										
NEW JERSEY—Continued																
Mountainside Hospital ^{1,3,4}	Montclair	NPAssn	326	5	39	6,423	R	6	24	July	No	Req	32	\$15	Dec	
All Souls Hospital	Morristown	Church	144	27	25	2,365	R	3	12	JulySept	No	Req	35	\$35	Jan	
Morristown Memorial Hospital	Morristown	NPAssn	155	..	63	3,205	R	6	12	June-Sept	No	Req	36	\$30	May	
Burlington County Hospital ¹	Mount Holly	NPAssn	145	36	70	2,906	R	4	12	July	(66)	Req	60	\$25	Feb	
Fitkin Memorial Hospital	Neptune	NPAssn	224	62	62	5,129	R	6	12	JanJuly	No	Req	19	\$25	.....
Hospital of St. Barnabas and for Women and Children ¹	Newark	Church	235	27	..	4,788	R	5	12	July	No	Req	24	\$25	Fall	
Newark Beth Israel Hospital ^{3,4}	Newark	NPAssn	455	..	30	11,738	R	12	18	JanJuly	No	Req	27	\$15	Dec	
Newark City Hospital ^{1,3,4}	Newark	City	740	100	100	16,934	R	12	24	Quarterly	No	Req	30	\$15-20	Dec	
Newark Memorial Hospital	Newark	NPAssn	165	11	55	2,924	R	4	12	July	No	Req	..	\$25	March	
St. James Hospital ¹	Newark	Church	133	26	84	2,793	R	3	12	July	No	Req	27	\$30	March	
St. Michael's Hospital	Newark	Church	335	2	..	6,225	R	7	12	JulySept	(64)	Req	20	\$25	Nov	
St. Peter's General Hospital ¹	New Brunswick	Church	210	40	..	4,427	R	5	12	JulySept	No	Req	31	\$20	June	
Orange Memorial Hospital	Orange	NPAssn	400	18	40	8,150	R	8	12	July	No	Req	26	\$25	Nov	
St. Mary's Hospital	Orange	Church	150	22	..	2,883	R	3	12	July	No	Req	25	\$25	Nov	
Passaic General Hospital	Passaic	NPAssn	225	33	33	4,978	R	4	12	July	No	Req	22	\$25	Nov	
St. Mary's Hospital	Passaic	Church	218	20	..	5,716	R	4	12	July	No	Op	44	\$25	Nov	
Nathan and Miriam Barnert Memorial Hos- pital	Paterson	NPAssn	145	34	65	3,765	R	5	12	JulySept	No	Req	34	\$15	Dec	
Paterson General Hospital ¹	Paterson	NPAssn	323	37	..	7,391	R	4	24	July	No	Op	29	\$12.50(n)	Nov	
St. Joseph's Hospital	Paterson	Church	450	40	60	6,900	R	5	24	July	No	Req	25	\$13-25	Nov	
Perth Amboy General Hospital	Perth Amboy	NPAssn	163	17	45	5,170	R	5	12	JanJuly	No	None	16	\$50	OctApril	
Muhlenberg Hospital ³	Plainfield	NPAssn	305	34	..	6,578	R	6	12	July	No	Req	24	\$25	Jan	
Holy Name Hospital	Teaneck	Church	225	35	..	5,108	R	6	12	July	No	Req	40	\$40	Jan	
Mercer Hospital	Trenton	NPAssn	250	37	49	5,368	R	6	12	July	No	Req	15	\$25	Varies	
St. Francis Hospital	Trenton	Church	321	39	..	6,490	R	8	12	July	No	Req	26	\$25	Oct	
William McKinley Memorial Hospital	Trenton	NPAssn	156	40	100	2,930	R	4	12	July	No	Req	19	\$25	.....
North Hudson Hospital ^{1,3}	Weehawken	NPAssn	191	16	57	3,641	R	8	12	JanJulySept	(64)	Req	36	\$25	Varies	
NEW YORK																
Albany Hospital ^{1,3,4}	Albany	NPAssn	632	3	61	12,200	R	21	12&24	July	No	Req	68	(u)	Nov	
Memorial Hospital ¹	Albany	NPAssn	136	1	45	2,726	R	5	12	JulySept	No	Req	31	\$25	Jan	
St. Peter's Hospital	Albany	Church	155	23	23	3,393	R	5	12	July	(67)	Req	29	\$40	Nov	
Binghamton City Hospital ^{3,4}	Binghamton	City	575	47	47	6,666	R	6	24	July	No	Req	35	\$25	Nov	
Beth-El Hospital ¹	Brooklyn	NPAssn	270	41	41	7,893	R	12	12&24	JanJuly	No	Req	28	No	Oct	
Beth Moses Hospital ³	Brooklyn	NPAssn	224	44	..	4,776	R	8	24	JanJuly	No	Req	23	\$15	Dec	
Brooklyn Hospital ⁴	Brooklyn	NPAssn	410	44	61	8,395	R	8	24	July	No	Req	61	No	Nov	
Bushwick Hospital	Brooklyn	NPAssn	130	1	100	2,997	R	5	24	July	No	Req	25	No	Dec	
Caledonian Hospital ¹	Brooklyn	NPAssn	130	28	100	2,292	M	2	24	July	No	Req	31	\$25	Jan	
Coney Island Hospital ^{1,3,4}	Brooklyn	City	409	100	100	8,634	R	11	24	July	No	Req	29	\$15	Dec	
Cumberland Hospital ^{3,4}	Brooklyn	City	395	100	100	8,545	R&S	14	12&24	July	No	Op	67	\$15	Dec	
Greenpoint Hospital ^{1,3,4}	Brooklyn	City	300	100	100	8,365	R	10	24	July	No	Op	34	\$15	Dec	
Israel Zion Hospital ¹	Brooklyn	NPAssn	484	24	33	9,975	R	16	24&30	JanJuly	(68)	Req	23	No	Nov	
Jewish Hospital ^{1,3,4}	Brooklyn	NPAssn	661	31	44	12,702	M&S	27	12-24	JanJuly	No	Req	46	No	Nov	
Kings County Hospital ^{3,4}	Brooklyn	City	2,945	100	100	59,068	RMS	63	12&24	July	No	Req	19	\$15	Nov	
Long Island College Hospital ^{1,4}	Brooklyn	NPAssn	467	44	72	9,330	R&S	21	12	July	(69)	Req	41	No	Jan	
Methodist Hospital ⁴	Brooklyn	Church	480	30	85	9,825	R	7	24	July	No	Req	40	No	Nov	
Norwegian Lutheran Deaconesses' Home and Hospital ^{1,4}	Brooklyn	Church	200	..	60	3,768	R	10	12	July	No	Req	48	No	Nov	
St. Catherine's Hospital	Brooklyn	Church	353	..	90	7,057	R	8	24	July	No	Req	27	No	Nov	
St. John's Hospital ¹	Brooklyn	Church	234	49	..	5,260	R	4	36	July	No	Req	42	No	Nov	
St. Mary's Hospital ¹	Brooklyn	Church	306	22	78	6,139	R	7	24	July	No	Req	25	No	Nov	
St. Peter's Hospital	Brooklyn	Church	226	..	..	3,546	R	7	12	July	No	None	21	No	Jan
United States Naval Hospital	Brooklyn	Navy	515	100	100	3,549	R	..	12	July	No	Req	33	..	.....
Unity Hospital ³	Brooklyn	NPAssn	248	54	65	4,928	R	7	24	July	No	Req	25	No	Dec	
Wyckoff Heights Hospital	Brooklyn	NPAssn	199	28	58	4,605	M	6	18-24	JanJuly	No	Req	20	No	Varies	
Buffalo General Hospital ^{3,4}	Buffalo	NPAssn	475	9	65	10,618	R	15	12	July	No	Req	44	No	Nov	
Buffalo Hospital of the Sisters of Charity	Buffalo	Church	229	1	29	4,079	R	12	12	July	(70)	Req	20	\$25	Sept	
Deaconess Hospital ⁴	Buffalo	NPAssn	239	2	15	5,945	R	6	12	July	No	Req	44	\$25	Dec	
Edward J. Meyer Memorial Hospital ^{1,3,4} (Buffalo City Hospital)	Buffalo	City	1,063	65	96	10,964	R	13	12	July	No	Req	29	\$50(a)	Dec	
Mercy Hospital	Buffalo	Church	198	3	..	4,226	R	5	12	July	No	Req	21	\$30	Nov	
Millard Fillmore Hospital ¹	Buffalo	NPAssn	327	19	19	6,837	R	7	12	July	(71)	Req	31	\$15	Nov	
Mary Imogene Bassett Hospital ^{1,4}	Cooperstown	NPAssn	105	..	..	1,984	R&S	4	12&24	July	(72)	None	63	\$50	Jan
Arnot-Ogden Memorial Hospital	Elmira	NPAssn	213	5	..	4,057	R	4	12	July	No	Req	29	\$20(d)	Nov	
St. Joseph's Hospital	Elmira	Church	216	7	100	3,737	R	5	12	July	No	Req	30	\$25	Dec	
Ideal Hospital ¹	Endicott	City	146	2	..	2,693	R	3	12	July	No	None	37	\$35	Varies	
Flushing Hospital and Dispensary ³	Flushing	NPAssn	294	2	..	7,100	R	5	24	June	No	Req	31	\$25	Dec	
Meadowbrook Hospital ^{1,4}	Hempstead	County	268	90	100	6,186	R	6	24	July	No	Req	50	\$25	Dec	
Jamaica Hospital ¹	Jamaica	NPAssn	223	15	25	4,912	R	5	24	JanJuly	No	Req	34	\$15	.....
Mary Immaculate Hospital ^{3,4}	Jamaica	Church	320	22	33	7,875	R	8	24	July	No	Req	26	No	Nov	
Queens General Hospital ^{1,3,4}	Jamaica	City	696	100	100	13,203	R&S	22	12&24	July	No	Req	63	\$15	Sept	
Charles S. Wilson Memorial Hospital ^{3,4}	Johnson City	NPAssn	350	1	100	5,525	R	7	24	July	(73)	Req	51	\$50	Dec	
Kingston Hospital ¹	Kingston	NPAssn	133	1	51	2,995	R	3	12	July	(74)	None	31	\$25(o)	Varies	
Our Lady of Victory Hospital	Lackawanna	Church	160	5	100	2,747	R	4	12	July	No	Req	35	\$50	Jan	
St. John's Long Island City Hospital ³	Long Island City	Church	291	9	9	5,163	R	7	24	July	No	Req	44	No	Dec	
Nassau Hospital	Mineola	NPAssn	192	1	32	5,403	R	4	12	July	No	Req	35	\$50	Dec	
Mount Vernon Hospital	Mount Vernon	NPAssn	151	26	32	4,229	R	3	24	July	No	None	24	(w)	Nov	
New Rochelle Hospital ⁴	New Rochelle	NPAssn	294	9	..	5,397	R	8	12	July	No	Req	42	\$25	Dec	
Beckman Hospital ¹	New York	NPAssn	100	63	63	1,916	M	4	24	JanJuly	No	Req	67	\$30	Nov	
Bellevue Hospital ^{1,3,4}	New York	City	2,553	100	100	64,566	RMS	98	12-24	JanJuly	No	Req	31	\$15	OctNov	
Beth David Hospital	New York	NPAssn	200	29	60	3,965	R	8	24	JanJuly	No	Req	28	No	Dec	
Beth Israel Hospital ^{1,3,4}	New York	NPAssn	400	39	49	9,950	R&S	12	24-36	July	No	Req	43	No	Dec	
Bronx Hospital ^{3,4}	New York	NPAssn	362	27	51	11,074	R	6	24	Quarterly	No	Req	31	(e)	Dec	
Columbus Hospital	New York	Church	300	23	56	5,049	R	12	18	JanJuly	No	Req	17	No	.....
Flower and Fifth Avenue Hospitals ^{3,4}	New York	NPAssn	410	5	43	8,510	S	12	15	Quarterly	No	Req	26	No	Quarterly	
Fordham Hospital ^{3,4}	New York	City	609	100	100	14,552	R	20	12&24	MarJulyNov	No	Req	26	\$15	Dec	
French Hospital ⁴	New York	NPAssn	332	7	93	5,847	S	9	12&21	Quarterly	No	Op	33	No	Nov	
Gouverneur Hospital ³	New York	City	220	100	100	4,429	R	16	12&24	JanJuly	No	Req	27	\$15	Nov	
Harlem Hospital ^{1,3,4}	New York	City	763	100	100	18,965	R	24	24	JanJuly	No	Op	25	\$15	Dec	
Hospital for Joint Diseases ^{3,4}	New York	NPAssn	355	60	60	6,643	R	6	24	JanJuly	(75)	Req	23	\$15	Nov	
Jewish Memorial Hospital ³	New York	NPAssn	209	24	79	4,753	R	6	24	JanJuly	No	Req	34	(o)	Dec	
Kniekerbocker Hospital ³	New York	NPAssn	260	64	..	4,347	R	6	20	JanJuly	No	Op	37	No	Nov	
Lebanon Hospital	New York	NPAssn	154	50	..	2,603	R	4	24	AprilOct	No	Req	26	No	Dec	

Name of Hospital	Location	Control	Capacity	Free Care	For Teaching	Percentage of Patients Treated	Type of Internship	Interns Appointed Annually	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month	Appointments Made
NEW YORK—Continued															
Lenox Hill Hospital ^{1,3,4}	New York.....	NPAssn	677	35	100	11,734	R	12	24	JanJuly	No	Req	50	\$40 yr	Oct
Lincoln Hospital ^{3,4}	New York.....	City	469	100	100	9,666	R	24	24	MarchJuly	No	Req	33	\$15	Dec
Manhattan General Hospital ¹	New York.....	Corp	248	..	*	4,766	R	6	18	JanJuly	No	None	32	\$33.50(x)	SeptMay
Metropolitan Hospital ^{1,3,4}	New York.....	City	1,111	100	100	13,151	R	21	24	July	No	Req	27	\$15	Dec
Misericordia Hospital ¹	New York.....	Church	263	5	37	3,351	R	4	24	JanJuly	No	Req	20	\$20	JulyJan
Montefiore Hosp. for Chronic Diseases ^{1,3,4}	New York.....	NPAssn	714	87	90	1,715	M&S	11	12	JanJuly	No	Req	72	\$25	Nov
Morrisania City Hospital ^{3,4}	New York.....	City	539	100	100	12,044	R	16	24	JanJuly	No	Req	30	\$15	Dec
Mount Sinai Hospital ^{1,3,4}	New York.....	NPAssn	856	55	67	16,726	M&S	14	12&30	MarJulyNov	No	Op	45	No	Oct
New York City Hospital ^{1,3,4}	New York.....	City	880	100	100	10,653	RMS	22	12&24	July	No	Req	41	\$15	Nov
New York Hospital ^{1,4}	New York.....	NPAssn	1,057	6	77	16,312	S	36	12&24	July	(76)	Op	57	No	Dec
New York Infirmary for Women and Children ^{2,3,4}	New York.....	NPAssn	167	35	95	3,651	R	5	12	JuneSept	No	Req	60	\$10	Sept
New York Polyclinic Medical School and Hospital ^{3,4}	New York.....	NPAssn	360	12	*	8,739	R	4	24	Quarterly	No	Req	28	No	JanMaySept
New York Post-Graduate Medical School and Hospital ^{3,4}	New York.....	NPAssn	410	16	48	9,146	M&S	8	12&24	Quarterly	No	Req	42	No	Nov
Presbyterian and Sloan Hospitals ^{1,3,4}	New York.....	NPAssn	966	31	59	17,449	M&S	20	12-25	FebJuneOct	No	Req	49	No	Nov
Roosevelt Hospital ^{3,4}	New York.....	NPAssn	397	9	77	7,555	S	14	30&36	JanJuly	No	Req	37	No	Varies
St. Francis Hospital	New York.....	Church	415	40	65	5,641	M&S	4	24	JanJuly	No	None	16	No	Dec
St. Luke's Hospital ^{3,4}	New York.....	Church	517	41	75	8,457	M	8	12&24	JanJuly	No	Req	52	No	Oct
St. Vincent's Hospital ^{3,4}	New York.....	Church	465	19	..	10,197	M	14	30	JanJuly	No	Req	33	(o)	Nov
Sydenham Hospital ^{3,4}	New York.....	NPAssn	203	10	55	4,639	R&M	10	12&24	JanJuly	No	Req	51	No	Dec
Welfare Hospital for Chronic Diseases ^{1,3,4}	New York.....	City	1,500	100	100	2,745	M	12	12	July	No	Req	47	\$18	Nov
United Hospital	Port Chester.....	NPAssn	202	2	80	4,594	R	6	12	July	No	Req	30	\$40(e)	Nov
Vassar Brothers Hospital	Poughkeepsie.....	NPAssn	225	18	50	4,834	R	4	12	July	No	Req	18	\$20(d)	Nov
Genesee Hospital ^{3,4}	Rochester.....	NPAssn	244	..	45	5,713	R	4	24	July	(77)	Req	44	No	Nov
Highland Hospital	Rochester.....	NPAssn	263	4	100	5,431	R	5	24	July	No	Req	32	\$25	Nov
Rochester General Hospital ^{3,4}	Rochester.....	NPAssn	375	10	89	8,917	R	3	24	July	No	Req	52	\$15	.....
St. Mary's Hospital ^{3,4}	Rochester.....	Church	238	20	..	6,731	R	6	12	July	No	Req	34	\$20	Jan
Strong Memorial and Rochester Municipal Hospitals ^{1,4}	Rochester.....	NP-Cy	665	62	92	14,673	M&S	27	12&24	July	No	Req	67	No	Oct
Ellis Hospital ¹	Schenectady.....	NPAssn	456	1	..	8,255	R	10	12	July	No	Req	21	\$15	Dec
U. S. Marine Hospital ³ (Staten Island)	Stapleton.....	USPHS	661	100	100	7,914	R&S	20	12	July	(78)	Req	65	\$62.50	Dec
St. Vincent's Hospital	Staten Island.....	Church	241	2	76	5,797	R	4	24	July	No	Req	16	No	Jan
Staten Island Hospital	Staten Island.....	Corp	292	2	..	5,776	R	4	24	July	No	Req	43	\$15	Nov
Crouse-Ingber Hospital	Syracuse.....	NPAssn	240	8	39	5,634	R	4	12	July	No	Req	33	\$25	Nov
General Hospital ¹	Syracuse.....	NPAssn	110	4	30	2,719	R	4	12	July	No	Req	29	\$10	Feb
Hospital of the Good Shepherd ^{3,4}	Syracuse.....	NPAssn	210	2	47	4,851	R	12	24	July	(79)	None	40	No	Nov
St. Joseph Hospital	Syracuse.....	Church	231	30	53	6,842	R	8	12	July	No	None	18	No	Nov
Syracuse Memorial Hospital ^{3,4}	Syracuse.....	NPAssn	250	30	39	6,033	R	12	24	July	(79)	None	46	No	Nov
Leonard Hospital	Troy.....	NPAssn	125	6	15	2,583	R	4	12	July	No	None	16	\$20	Jan
Samaritan Hospital	Troy.....	NPAssn	182	3	45	4,035	R	4	12	JulySept	No	Req	31	\$25	Dec
Troy Hospital ¹	Troy.....	Church	294	10	..	4,159	R	4	12	July	(67)	Req	16	\$30	Dec
Grasslands Hospital ^{1,3,4}	Valhalla.....	County	815	91	100	5,798	R	12	24	JanJuly	No	Req	68	(y)	Nov
St. Agnes Hospital	White Plains.....	Church	177	4	90	3,865	R	5	12	July	No	Req	41	\$25	Nov
St. John's Riverside Hospital	Yonkers.....	NPAssn	200	1	65	5,017	R	6	12	AprJulyOct	No	Req	29	\$25	Varies
St. Joseph's Hospital	Yonkers.....	Church	197	7	100	3,123	R	6	18	JanJuly	No	Req	29	...	Dec
NORTH CAROLINA															
Duke Hospital ^{3,4}	Durham.....	NPAssn	570	63	85	11,363	S	65	12	JulySept	No	Req	54	No	Jan
Lincoln Hospital	Durham.....	NPAssn	103	55	72	1,829	R	4	12	July	No	Req	35	\$25	Jan
Watts Hospital ^{3,4}	Durham.....	NPAssn	225	24	32	5,442	R&S	5	12	July	No	Req	28	\$15	Feb
Rex Hospital	Raleigh.....	NPAssn	200	30	85	5,009	R	5	12	July	No	Req	24	\$25	Nov
James Walker Memorial Hospital	Wilmington.....	NPAssn	197	49	100	6,432	R	6	12	July	No	Req	38	\$25(e)	Feb
City Hospital ^{3,4}	Winston-Salem.....	City	345	38	33	7,518	R&M	12	12	July	No	Req	26	\$15(z)	Nov
NORTH DAKOTA															
St. John's Hospital ¹	Fargo.....	Church	185	3	..	5,300	R	4	12	July	(80)	None	37	\$25	Nov
Trinity Hospital ^{3,4}	Minot.....	Church	188	10	*	3,611	R	4	12	July	No	None	83	\$25	Nov
OHIO															
City Hospital ^{3,4}	Akron.....	NPAssn	365	33	33	11,662	R	15	12	July	(81)	Req	48	\$22	Nov
Peoples Hospital ¹	Akron.....	NPAssn	176	23	23	4,811	R	4	12	July	(81)	Req	36	\$30	Nov
St. Thomas Hospital ^{3,4}	Akron.....	Church	175	20	60	5,481	R	3	12	July	No	None	31	\$20	Nov
Aultman Hospital	Canton.....	NPAssn	171	23	23	2,610	R	4	12	July	(82)	Op	30	\$50	Nov
Mercy Hospital ^{3,4}	Canton.....	Church	235	19	*	6,247	R	6	12	July	No	Op	31	\$25	Nov
Bethesda Hospital	Cincinnati.....	Church	279	35	20	6,581	R	7	12	July	No	Req	18	\$30(d)	Nov
Christ Hospital ^{3,4}	Cincinnati.....	Church	371	13	95	5,332	R	9	12	June	(83)	Req	28	\$22.50	Nov
Cincinnati General Hospital ^{1,3,4}	Cincinnati.....	City	972	87	100	15,979	R	40	12	July	(84)	Req	69	No	Nov
Deaconess Hospital ^{3,4}	Cincinnati.....	Church	200	6	42	4,709	R	6	12	July	(85)	Req	19	\$25(e)	Dec
Good Samaritan Hospital ^{3,4}	Cincinnati.....	Church	615	5	8	11,102	R	12	12	June	No	Req	19	\$15	Dec
Jewish Hospital ^{1,4}	Cincinnati.....	NPAssn	262	17	17	5,895	R	8	12	July	(86)	Op	32	\$20	Dec
St. Mary's Hospital	Cincinnati.....	Church	223	60	60	4,635	R	6	12	July	No	Req	18	\$25	Nov
City Hospital ^{1,3,4}	Cleveland.....	City	1,600	92	100	14,034	R	36	12	July	No	Req	40	No	Nov
Fairview Park Hospital	Cleveland.....	Church	181	13	14	3,679	R	3	12	July	No	Req	43	\$30	Jan
Lutheran Hospital ¹	Cleveland.....	Church	137	5	100	4,413	R	4	12	July	No	None	35	\$25(d)	Nov
Mount Sinai Hospital ^{1,3,4}	Cleveland.....	NPAssn	270	13	23	8,638	R	6	24	July	No	Req	32	\$10(g)	Nov
St. Alexis Hospital ^{3,4}	Cleveland.....	Church	220	35	35	5,281	R	8	12	July	(87)	Req	37	\$10	Nov
St. John's Hospital ^{3,4}	Cleveland.....	Church	252	17	17	6,804	R	7	12	July	No	None	35	\$10(aa)	Dec
St. Luke's Hospital ^{3,4}	Cleveland.....	Church	391	17	21	12,421	R&S	10	24	June	No	Req	35	No	Nov
St. Vincent Charity Hospital ^{3,4}	Cleveland.....	Church	235	32	35	6,317	R	12	12	July	(87)	Req	40	No	Dec
University Hospitals ^{1,3,4}	Cleveland.....	NPAssn	607	23	48	20,151	M&S	25	12-24	(bb)	No	Req	61	(y)	Nov
Woman's Hospital ¹	Cleveland.....	NPAssn	127	6	6	2,605	R	2	12	July	No	None	22	\$25	Dec
Mount Carmel Hospital	Columbus.....	Church	225	20	5	5,779	R	6	12	July	(88)	None	32	\$25	Jan
St. Francis Hospital	Columbus.....	State	160	66	66	3,072	R	8	12	July	(89)	None	34	\$125.77	Nov
Starling-Loving University Hospital ^{1,4}	Columbus.....	State	296	59	70	6,023	S	12	12	July	(90)	Req	67	\$50.77	Oct
White Cross Hospital	Columbus.....	Church	271	12	100	6,981	R	6	12	July	No	None	51	\$25	Dec
Good Samaritan Hospital ¹	Dayton.....	Church	283	40	28	4,837	R	4	12	July	(91)	None	37	\$25	Nov
Miami Valley Hospital ^{3,4}	Dayton.....	NPAssn	444	28	28	10,749	R	8	12	July	No	None	24	\$25	Nov
St. Elizabeth Hospital	Dayton.....	Church	400	35	38	8,020	R	6	12	July	No	None	24	\$25	Nov
Huron Road Hospital ^{1,4}	East Cleveland.....	NPAssn	256	9	..	8,371	R	8	12	July	No	Req	47	\$20	Nov

Name of Hospital	Location	Control	Capacity	Percentage of Patients			Type of Internship	Interns Appointed Annually	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month	Appointments Made
				Free Care	For Teaching	Total Patients Treated									
OHIO—Continued															
Mercy Hospital	Hamilton.....	Church	240	40	75	3,240	R	3	12	July	No	Req	23	\$25(cc)	Nov
Lima Memorial Hospital	Lima.....	NPAssn	144	13	75	3,746	R	4	12	July	No	None	27	\$50	.....
St. Rita's Hospital	Lima.....	Church	117	..	..	2,355	R	13	12	July	No	None	30	\$35	Jan
Springfield City Hospital	Springfield.....	City	293	39	65	5,547	R	7	12	July	No	Req	32	\$30	Nov
Flower Hospital	Toledo.....	Church	160	6	..	2,725	R	4	12	July	No	None	25	\$25(e)	Dec
Lucas County General Hospital +	Toledo.....	County	325	100	100	4,333	R	12	12	July	No	Req	37	\$25	Nov
Mercy Hospital 1	Toledo.....	Church	145	13	95	3,540	R	3	12	July	No	Req	37	\$25	Nov
St. Vincent's Hospital 1	Toledo.....	Church	354	30	30	8,954	R	11	12	July	No	Req	23	\$25	Jan
Toledo Hospital	Toledo.....	NPAssn	275	8	..	5,519	R	8	12	July	No	Req	39	\$25	Nov
Women's and Children's Hospital	Toledo.....	NPAssn	150	2	30	2,561	R	3	12	July	No	None	23	\$25	Jan
St. Elizabeth's Hospital +	Youngstown.....	Church	262	8	10	8,166	R	7	12	July	No	None	12	\$30(d)	Nov
Youngstown Hospital 2+	Youngstown.....	NPAssn	567	20	20	11,516	R	16	24	July	No	Req	27	(dd)	Nov
OKLAHOMA															
St. Anthony Hospital +	Oklahoma City...	Church	400	8	16	10,207	R	9	12	July	No	None	15	\$20	Nov
State University and Crippled Children's Hospitals 2+	Oklahoma City...	State	463	95	100	6,532	R	11	24	July	(131)	Req	55	\$10-25	Nov
Wesley Hospital	Oklahoma City...	Part	160	..	..	4,217	R	4	12	July	No	None	23	\$25	Nov
St. John's Hospital	Tulsa.....	Church	250	33	33	6,277	R	6	12	July	No	None	22	\$25(o)	Oct
OREGON															
Emanuel Hospital 1+	Portland.....	Church	323	10	100	9,032	R	11	12	June	(92)	None	39	\$20	Nov
Good Samaritan Hospital	Portland.....	Church	359	6	100	8,273	R	10	12	July	No	None	30	\$20	Nov
Portland Sanitarium and Hospital	Portland.....	Church	153	12	*	5,912	R	4	12	June	No	None	46	\$40	Nov
St. Vincent's Hospital +	Portland.....	Church	422	10	5	10,563	R	10	12	June	No	None	53	\$25	Oct
University of Oregon Medical School Hospitals and Clinics 2+	Portland.....	CoState	465	100	100	7,569	R	9	24	July	No	Req	63	\$20	Nov
PENNSYLVANIA															
Abington Memorial Hospital +	Abington.....	NPAssn	305	13	65	6,532	R	6	24	July	No	Req	63	No	Nov
Allentown Hospital 1,3	Allentown.....	NPAssn	335	56	98	8,518	R	10	12	July	No	Req	50	No	Oct
Sacred Heart Hospital 3	Allentown.....	Church	325	65	65	5,209	R	7	12	July	No	Req	36	No	Oct
Altoona Hospital	Altoona.....	NPAssn	180	43	..	3,393	R	4	12	July	No	Req	22	\$25	Jan
Mercy Hospital	Altoona.....	Church	180	54	54	3,494	R	4	12	July	No	Req	43	\$25	Oct
St. Luke's Hospital 2+	Bethlehem.....	NPAssn	216	48	48	4,651	R	8	12	July	No	Req	38	(c)	Varies
Braddock General Hospital 1	Braddock.....	NPAssn	137	23	..	3,253	R	4	12	July	No	Req	17	\$25	Jan
Bryn Mawr Hospital 2+	Bryn Mawr.....	Corp	264	8	..	5,112	R	8	12	July	No	Req	48	No	Nov
Chester Hospital 3	Chester.....	NPAssn	250	48	..	4,737	R	6	12	July	No	Req	25	\$15	Jan
George F. Geisinger Memorial Hospital +	Danville.....	NPAssn	174	41	100	5,604	R	10	12	July	No	Req	37	No	Dec
Fitzgerald-Mercy Hospital 1	Darby.....	Church	248	60	..	3,975	R	8	12	July	No	Req	61	No	Jan
Easton Hospital	Easton.....	NPAssn	220	40	40	4,882	R	5	12	July	No	Req	19	(c)	Jan
Hamot Hospital	Erie.....	NPAssn	255	60	60	6,431	R	8	12	July	No	Req	52	\$25	Nov
St. Vincent's Hospital	Erie.....	NPAssn	330	51	100	6,701	R	8	12	June	No	Req	35	\$15(d)	Nov
Harrisburg Hospital 1	Harrisburg.....	NPAssn	264	41	41	7,075	R	10	12	July	No	Req	26	\$15	Nov
Harrisburg Polyclinic Hospital	Harrisburg.....	NPAssn	192	39	39	4,091	R	5	12	July	No	Req	19	\$25	Nov
Conemaugh Valley Memorial Hospital	Johnstown.....	NPAssn	345	53	..	6,583	R	8	12	July	No	Req	19	\$25	Nov
Nesbitt Memorial Hospital	Kingston.....	NPAssn	140	15	..	3,045	R	3	12	July	No	Req	15	No	Nov
Lancaster General Hospital 1	Lancaster.....	NPAssn	277	35	45	6,417	R	7	12	July	No	Req	39	\$17.50	Dec
St. Joseph's Hospital 1	Lancaster.....	Church	232	39	39	4,493	R	6	12	July	No	Req	65	\$17.50	Jan
McKeesport Hospital	McKeesport.....	NPAssn	290	44	44	5,700	R	7	12	July	No	Req	28	\$25	Nov
Montgomery Hospital	Norristown.....	NPAssn	160	50	50	3,305	R	5	12	July	No	Req	37	\$30	.....
Chestnut Hill Hospital	Philadelphia.....	NPAssn	114	39	..	1,894	R	4	12	July	No	Req	71	\$50	Oct
Frankford Hospital	Philadelphia.....	NPAssn	192	13	60	4,363	R	7	12	July	No	Req	31	No	Dec
Germantown Dispensary and Hospital 2+	Philadelphia.....	NPAssn	396	24	100	7,506	R	6	24	July	No	Req	33	No	Oct
Graduate Hospital of the University of Pennsylvania +	Philadelphia.....	NPAssn	461	61	69	6,952	R	8	24	July	(93)	Req	45	No	Nov
Hahnemann Hospital 2+	Philadelphia.....	NPAssn	592	52	64	12,407	R	24	12	July	No	Req	36	No	Jan
Hospital of the Protestant Episcopal Church 2+	Philadelphia.....	Church	530	..	100	8,201	R	8	24	Jan/July	No	Req	76	No	Nov
Hosp. of the ..	Philadelphia.....	NPAssn	523	27	78	11,266	R	14	24	July	No	Req	67	No	Oct
Jefferson Medical College Hospital 2+	Philadelphia.....	NPAssn	173	43	35	3,097	R	6	12	July/Sept	No	Req	41	No	Nov
Jewish Hospital 1,2+	Philadelphia.....	NPAssn	745	77	77	13,742	R	15	27	June	No	Req	49	No	Jan
Lankenau Hospital	Philadelphia.....	NPAssn	545	27	17	8,977	R	9	24	June	(94)	Req	62	No	Dec
Mercy Hospital	Philadelphia.....	NPAssn	292	36	100	4,459	R	5	24	July	(95)	Req	48	No	Dec
Methodist Hospital 1	Philadelphia.....	NPAssn	110	42	100	1,834	R	5	12	July	(96)	Req	16	\$10	Jan
Misericordia Hospital 1,3	Philadelphia.....	Church	203	34	100	4,255	R	7	12	July	No	Req	39	No	Oct
Mount Sinai Hospital 1,2+	Philadelphia.....	Church	230	12	..	4,257	R	9	12	July	No	Req	41	No	Dec
Northeastern Hospital 1,3	Philadelphia.....	NPAssn	316	25	61	7,534	R	7	24	June	No	Req	55	No	Nov
Pennsylvania Hospital 2+	Philadelphia.....	NPAssn	117	13	..	2,706	R	4	12	July	No	Req	62	\$20	Dec
Philadelphia General Hospital 1,2+	Philadelphia.....	NPAssn	560	26	63	8,503	R	12	24	July/Sept/Nov	(97)	Req	57	No	Fall
Presbyterian Hospital 2+	Philadelphia.....	City	2,736	95	100	25,369	R	30	24	July	(94)	Req	60	No	Oct
St. Joseph's Hospital 1	Philadelphia.....	Church	356	9	*	5,378	R	6	24	July	No	Req	82	No	Oct
St. Luke's and Children's Hospital	Philadelphia.....	Church	184	35	93	2,820	R	6	12	July	No	Req	41	No	Jan
St. Mary's Hospital	Philadelphia.....	NPAssn	250	27	60	4,802	R	9	12	July	No	Req	31	No	Nov
Temple University Hospital 2+	Philadelphia.....	Church	239	44	30	4,645	R	8	12	July	No	Req	29	No	Fall
United States Naval Hospital	Philadelphia.....	NPAssn	437	43	59	9,951	R	9	24	June	(98)	Req	55	No	Nov
Woman's Hospital 2+	Philadelphia.....	Navy	630	100	100	7,271	R	8	12	August	(99)	Op	48	(h)	Aug
Women's Homoeopathic Hospital 1	Philadelphia.....	NPAssn	150	46	100	3,603	R	6	12	July/Sept	(100)	Op	56	No	Dec
Allegheny General Hospital 1,2+	Philadelphia.....	NPAssn	200	33	70	3,000	R	4	12	July	No	Req	51	\$10	Dec
Mercy Hospital 2+	Pittsburgh.....	NPAssn	595	51	..	9,350	R	16	12	July	No	Req	49	No	Fall
Montefiore Hospital +	Pittsburgh.....	Church	713	30	20	12,509	R	24	12	July	(101)	Req	35	No	Fall
Passavant Hospital 1	Pittsburgh.....	NPAssn	275	34	50	7,118	R	10	12	July	No	Req	42	No	Oct
Pittsburgh Hospital	Pittsburgh.....	Church	140	49	100	2,414	R	5	12	July	No	Req	41	\$10	Oct
Presbyterian Hospital 1+	Pittsburgh.....	NPAssn	203	32	41	4,321	R	6	12	July	No	Req	23	\$25	Nov
St. Francis Hospital 2+	Pittsburgh.....	NPAssn	150	35	60	3,116	R	18	12	July	(102)	Req	41	No	Jan
St. John's General Hospital	Pittsburgh.....	Church	652	30	20	14,217	R	20	12	July	(103)	Req	22	No	Nov
St. Joseph's Hospital and Dispensary	Pittsburgh.....	NPAssn	225	23	30	4,718	R	5	12	July	No	Req	23	\$25	Nov
St. Margaret Memorial Hospital	Pittsburgh.....	Church	140	25	100	2,323	R	4	12	July	No	Req	26	\$25	Jan
Shadyside Hospital	Pittsburgh.....	Church	150	37	100	2,606	R	4	12	July	No	Req	44	\$25	Jan
South Side Hospital	Pittsburgh.....	NPAssn	250	43	43	5,891	R	8	12	July	(103)	Req	24	No	Jan
	Pittsburgh.....	NPAssn	225	32	61	4,924	R	7	12	July	No	Req	23	No	Jan

Name of Hospital	Location	Control	Capacity	Percentage of Patients			Type of Internship	Interns Appointed Annually	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month	Appointments Made
				Free Care	For Teaching	Total Patients Treated									
PENNSYLVANIA—Continued															
Western Pennsylvania Hospital ^{1,2,4}	Pittsburgh	NPAssn	661	36	67	9,591	R	20	12	July	No	Req	36	No	Nov
Pottsville Hospital ¹	Pottsville	NPAssn	172	67	..	3,478	R	5	12	July	No	Req	33	\$25	Nov
Homeopathic Hospital	Reading	NPAssn	119	54	54	2,900	R	4	12	June	No	Req	35	\$25	Jan
Reading Hospital ^{2,4}	Reading	NPAssn	289	49	49	6,561	R	10	12	July	No	Req	67	No	Nov
St. Joseph Hospital	Reading	Church	230	65	62	4,567	R	6	12	July	(104)	Req	34	(Q)	Nov
Robert Packer Hospital ²	Sayre	NPAssn	325	55	60	7,630	R	10	12	July	No	Req	52	No	Nov
Moses Taylor Hospital	Scranton	NPAssn	120	..	100	2,070	R	3	12	July	(105)	Req	39	\$15	Jan
Scranton State Hospital ¹	Scranton	State	307	96	96	3,006	R	8	12	July	No	Req	32	\$8.33	Nov
Valley Hospital ¹	Sewickley	NPAssn	140	26	32	3,262	R	4	12	July	No	Req	32	\$25	Jan
Uniontown Hospital	Uniontown	NPAssn	235	23	23	5,161	R	5	12	July	No	Req	32	\$25	Jan
Washington Hospital	Washington	NPAssn	166	24	..	3,901	R	5	12	July	No	Req	32	\$25	Oct
Chester County Hospital	West Chester	NPAssn	181	50	63	2,882	R	4	12	July	No	Op	32	\$25	Jan
Mercy Hospital ¹	Wilkes-Barre	Church	220	55	95	4,531	R	6	12	July	No	Req	23	\$4 yr	Nov
Wilkes-Barre General Hospital ¹	Wilkes-Barre	NPAssn	403	61	100	8,613	R	12	12	July	No	Req	31	No	Dec
Columbia Hospital ¹	Wilkesburg	Church	217	25	53	3,519	R	6	12	July	No	Req	51	\$20	Fall
Williamsport Hospital ¹	Williamsport	NPAssn	262	60	60	5,627	R	7	12	July	No	Req	40	\$10	Dec
Windber Hospital ¹	Windber	NPAssn	117	10	100	3,144	R	3	12	July	No	Req	35	\$25	Dec
York Hospital	York	NPAssn	219	59	..	5,335	R	8	12	July	No	Req	48	\$25	Dec
RHODE ISLAND															
Memorial Hospital	Pawtucket	NPAssn	199	33	75	3,245	R	3	24	June	No	Req	17	No	Dec
Homeopathic Hospital	Providence	NPAssn	200	25	100	4,690	R	4	12	July	No	Req	33	\$50	Nov
Rhode Island Hospital ^{2,4}	Providence	NPAssn	623	55	100	7,890	R	12	24	Monthly	(106)	Req	55	No	Nov
St. Joseph's Hospital	Providence	Church	350	40	50	5,378	R	3	24	July/Nov	No	Req	16	No	Nov
SOUTH CAROLINA															
Roper Hospital ²	Charleston	NPAssn	300	74	74	8,261	R	15	12	July	No	Req	37	\$10	Nov
Columbia Hospital ¹	Columbia	County	305	26	26	8,048	R	7	12	July	No	Req	15	\$35(e)	Nov
Greenville General Hospital	Greenville	City	267	47	47	6,189	R	5	12	July	No	Req	15	\$15(k)	Dec
TENNESSEE															
Baroness Erlanger Hospital ^{2,4}	Chattanooga	CyCo	500	57	57	9,512	R	12	12	July	(107)	Req	27	\$25	Nov
Knoxville General Hospital ^{2,4}	Knoxville	City	312	70	85	8,163	R	9	18	Quarterly	No	Req	45	\$25	Varies
Baptist Memorial Hospital	Memphis	Church	500	38	38	15,653	R	8	18	(t)	No	None	20	\$25	Mar/Nov
John Gaston Hospital ²	Memphis	City	611	95	95	15,076	R	26	12&18	Monthly	No	Req	24	\$25	Quarterly
Methodist Hospital ²	Memphis	Church	185	30	30	6,697	R	6	12	Quarterly	No	None	38	\$50	.....
St. Joseph Hospital	Memphis	Church	240	30	..	6,323	R	7	12	(n)	No	None	16	\$35	Quarterly
George W. Hubbard Hospital ^{2,4}	Nashville	NPAssn	186	60	90	2,571	R	8	12	July	No	Req	35	\$15(g)	Jan
Nashville General Hospital ^{2,4}	Nashville	City	305	90	90	7,152	R	11	12	July	No	Req	42	\$20	Dec
St. Thomas Hospital	Nashville	Church	250	33	..	6,347	R	7	12	July	No	None	15	\$40	Sept
Vanderbilt University Hospital ²	Nashville	NPAssn	391	..	80	7,226	S	21	12	July	(108)	Req	62	No	Nov
TEXAS															
Baylor University Hospital ²	Dallas	Church	467	15	34	15,343	R	18	12	July	No	Req	35	\$25	Nov
Methodist Hospital ^{1,2}	Dallas	Church	140	7	7	4,141	R	5	12	July	No	Req	32	\$25(e)	Nov
Parkland Hospital ^{1,2,4}	Dallas	CyCo	436	95	98	10,771	R	12	12	Jan/July	(109)	Req	31	\$10	Nov
St. Paul's Hospital	Dallas	Church	300	13	..	10,587	R	10	12	July	No	Req	15	\$25	Oct
El Paso City-County Hospital ²	El Paso	CyCo	252	95	100	4,330	R	5	12	July	No	Req	28	\$25(g)	Nov
William Beaumont General Hospital	El Paso	Army	670	100	100	4,967	R	1	12	July	No	Req	..	\$60	.....
City and County Hospital ²	Fort Worth	CyCo	194	100	100	4,236	R	7	12	July	No	Req	49	\$25	Dec
Harris Memorial Methodist Hospital ¹	Fort Worth	Church	261	23	100	4,832	R	6	12	July	No	None	58	\$25(g)	Nov
St. Joseph's Hospital	Fort Worth	Church	221	11	11	5,693	R	5	12	July	No	None	26	\$25(d)	Nov
John Sealy Hospital ^{2,4}	Galveston	City	504	73	76	6,644	R	12	12	July	No	Req	50	No	Nov
Hermann Hospital	Houston	NPAssn	156	75	..	4,563	R	3	24	July	No	Req	49	\$20-30	Nov
Jefferson Davis Hospital ^{1,2,4}	Houston	CyCo	500	100	100	13,227	R	12	24	July	(110)	Req	34	\$25-30	Nov
Medical and Surgical Memorial Hospital ¹	San Antonio	NPAssn	130	7	..	3,850	R	4	12	July	No	Req	48	\$25	Nov
Nix Hospital ¹	San Antonio	Corp	169	..	..	4,956	R	4	12	July	(111)	None	22	\$50	.....
Robert B. Green Memorial Hospital ²	San Antonio	County	218	99	..	5,651	R	13	12	July	No	Req	44	\$10	Nov
Santa Rosa Hospital	San Antonio	Church	312	25	12	6,621	R	7	12	July	No	Req	17	\$25	Nov
Station Hospital (Fort Sam Houston)	San Antonio	Army	1,023	100	100	7,338	R	1	12	July	No	Req	..	\$60	.....
Kings Daughters Hospital ¹	Temple	NPAssn	118	..	..	3,160	R	3	12	July	No	Req	28	\$50	Nov
Scott and White Hospital ²	Temple	Corp	175	..	..	3,490	R	8	12	July	(113)	Req	39	\$50	Fall
UTAH															
Thomas D. Dee Memorial Hospital	Ogden	Church	240	10	..	6,066	R	6	12	July	No	Req	26	\$25	Nov
Dr. W. H. Groves Latter-Day Saints Hosp.	Salt Lake City	Church	454	18	..	8,319	R	6	24	July	(114)	None	34	\$15-20(r)	Nov
Holy Cross Hospital	Salt Lake City	Church	250	5	3	4,110	R	3	12	Jan/July	No	None	24	\$15(o)	.....
St. Mark's Hospital ¹	Salt Lake City	Church	164	23	..	3,405	R	3	12	July	No	None	19	\$25(e)	Nov
Salt Lake County General Hospital	Salt Lake City	County	258	94	94	4,211	R	4	24	July	No	Req	16	\$15-25(ec)	Nov
VERMONT															
Bishop DeGoesbriand Hospital ¹	Burlington	Church	122	45	..	3,747	R	3	12	July	No	None	38	\$25	Jan
Mary Fletcher Hospital ^{2,4}	Burlington	NPAssn	150	25	55	5,646	R	6	12	July/Sept	No	None	40	\$25	Nov
VIRGINIA															
University of Virginia Hospital ²	Charlottesville	State	411	27	67	9,294	S	15	12	July	(115)	Req	41	No	Nov
Hospital of St. Vincent de Paul	Norfolk	Church	250	42	75	4,479	R	5	12	July	No	Req	26	\$25	Nov
Norfolk General Hospital ²	Norfolk	NPAssn	267	28	55	7,311	R	7	12	July/Oct	(116)	Req	33	\$25	Nov
United States Marine Hospital ²	Norfolk	USPHS	360	100	100	3,376	R	8	12	July	(117)	Op	67	\$25.50	June
Norfolk Naval Hospital	Portsmouth	Navy	760	100	100	5,324	R	4	12	July	No	Req	31	(b)	July
Johnston-Willis Hospital ¹	Richmond	Corp	132	4	40	4,947	R	4	12	July	No	Req	41	\$15	Oct
Medical College of Virginia, Hospital Division ^{1,2,4} (Memorial, Dooley and St. Philip Hospitals)	Richmond	NPAssn	512	5	90	10,767	R&S	24	12	July	(118)	Req	35	No	Dec
Stuart Circle Hospital ¹	Richmond	Corp	97	2	..	2,825	R	4	12	July	No	Req	46	\$25	Dec
Jefferson Hospital ²	Roanoke	NPAssn	123	20	..	3,603	R	2	12	July	No	Req	24	\$50	Dec
Lewis-Gale Hospital	Roanoke	NPAssn	134	25	..	3,174	R	4	12	July	No	Req	38	\$50	Dec

Name of Hospital	Location	Control	Capacity	Free Care	Percent- age of Patients Treated	Type of Internship	Interns Appointed Annually	Length of Service in Months	Service Commences	Allied Service	Outpatient Service	Autopsy Percentage	Salary per Month	Appointments Made
WASHINGTON														
Columbus Hospital ¹	Seattle	Church	230	..	2,693	R	4	12	July	(119)	Req	51	\$30	Dec
King County Hospital Unit No. 1 ¹⁻⁴ (Har- borview)	Seattle	County	445	100	11,567	R	12	24	July	No	Req	47	\$30	Nov
Providence Hospital	Seattle	Church	350	3	7,869	R	5	12	July	(120)	Req	20	\$30	Dec
Seattle General Hospital	Seattle	NPAssn	120	..	3,605	R	3	12	July	No	None	20	\$30	Dec
Swedish Hospital	Seattle	NPAssn	320	..	6,914	R	10	12	JulyOct	(121)	Req	48	\$30	Nov
United States Marine Hospital ²	Seattle	USPHS	400	100	3,245	R	8	12	July	(120)	Req	67	\$62.50	May
Virginia Mason Hospital	Seattle	NPAssn	173	..	4,085	R	4	12	June	No	Req	34	\$30(e)	Oct
Deaconess Hospital	Spokane	Church	215	..	20,5103	R	4	12	July	(122)	None	15	\$25	Nov
Sacred Heart Hospital	Spokane	Church	400	10	9,503	R	9	12	July	(122)	None	30	\$35	Sept
St. Luke's Hospital	Spokane	NPAssn	178	..	3,823	R	4	12	July	(123)	None	28	\$35	July
Pierce County Hospital	Tacoma	County	220	95	100,4,398	R	3	12	July	No	Req	39	\$45	Nov
St. Joseph's Hospital	Tacoma	Church	312	19	17,4,121	R	4	12	July	No	Req	47	\$35	Oct
Tacoma General Hospital	Tacoma	NPAssn	220	5	75,5,112	R	4	12	July	No	Req	32	\$40	Nov
WEST VIRGINIA														
Charleston General Hospital ¹⁺	Charleston	NPAssn	275	10	75,7,462	R	9	12	July	No	Req	39	\$25	Nov
Kanawha Valley Hospital ¹	Charleston	Corp	133	5	80,2,611	R	4	12	July	No	Req	42	\$40	Nov
Chesapeake and Ohio Hospital	Huntington	NPAssn	130	..	2,890	R	3	12	July	No	Req	35	\$37.50	Nov
St. Mary's Hospital	Huntington	Church	220	20	..,4,991	R	4	12	July	No	Req	20	\$25	Dec
Camden-Clark Memorial Hospital	Parkersburg	City	185	..	80,2,585	R	3	12	July	No	None	45	\$12(e)	March
St. Joseph's Hospital	Parkersburg	Church	185	5	55,2,513	R	3	12	July	No	Req	23	\$60	Nov
Ohio Valley General Hospital ²	Wheeling	NPAssn	275	6	100,6,356	R	8	12	July	No	Req	19	\$25	Nov
Wheeling Hospital	Wheeling	Church	280	9	..,3,280	R	4	12	July	No	None	26	\$40	Dec
WISCONSIN														
St. Elizabeth Hospital	Appleton	Church	200	25	..,4,011	R	3	12	July	No	None	34	\$25	Dec
Luther Hospital ¹	Eau Claire	NPAssn	175	10	100,3,462	R	4	12	July	(124)	None	52	\$25(c)	Nov
St. Agnes Hospital	Fond du Lac	Church	263	12	..,5,901	R	4	12	June	No	None	24	\$25	Varies
La Crosse Lutheran Hospital	La Crosse	Church	144	4	..,2,591	M	1	12	July	No	None	38	\$50	Nov
St. Francis Hospital	La Crosse	Church	310	33	100,5,500	R	4	12	July	No	Req	45	\$20	Nov
Madison General Hospital ¹	Madison	NPAssn	185	20	100,5,352	R	6	12	July	No	None	60	\$25	Nov
Methodist Hospital	Madison	Church	120	4	..,2,854	R	3	18	JulyOct	No	Req	21	\$30	NovMay
St. Mary's Hospital	Madison	Church	215	20	75,5,731	R	5	12	June	No	None	49	\$25	Varies
State of Wisconsin General Hospital ¹⁺	Madison	State	672	84	93,12,263	R	24	12	July	No	Req	64	No	Nov
St. Joseph's Hospital	Marshfield	Church	175	15	100,3,667	R	3	12	July	No	None	19	\$30	Dec
Columbia Hospital ⁺	Milwaukee	NPAssn	175	1	..,3,299	R	5	24	July	(125)	None	56	\$25	Nov
Evangelical Deaconess Hospital ¹	Milwaukee	Church	163	5	100,4,169	R	5	12	July	(126)	None	36	\$25(c)	Nov
Milwaukee Hospital	Milwaukee	Church	265	15	..,6,550	R	7	12	July	No	Req	49	\$25	Nov
Misericordia Hospital	Milwaukee	Church	150	8	..,3,212	R	3	12	July	No	None	18	\$50	Dec
Mount Sinai Hospital	Milwaukee	NPAssn	190	13	13,6,119	R	7	12	July	No	Req	37	\$25	Nov
St. Joseph's Hospital ⁺	Milwaukee	Church	397	22	..,8,159	R	10	12	June	No	Req	30	\$17	Dec
St. Luke's Hospital	Milwaukee	Church	130	2	2,3,625	R	3	12	July	No	None	32	\$50	Jan
St. Mary's Hospital ⁺	Milwaukee	Church	200	18	75,6,352	R	5	12	July	No	None	26	\$25	Oct
Mercy Hospital ¹	Oshkosh	Church	219	40	100,2,948	R	4	12	July	No	None	25	\$35	Sept
St. Mary's Hospital	Racine	Church	213	2	..,4,705	R	2	12	July	No	None	32	\$25	Oct
St. Mary's Hospital	Superior	Church	200	32	35,1,893	R	2	12	July	No	None	34	\$25	Oct
Milwaukee County Hospital ¹⁺	Wauwatosa	County	1,125	98	100,20,179	R	40	12	June	(127)	Req	37	\$10	Nov
CANAL ZONE														
Gorgas Hospital	Ancon	Fed	880	10	..,12,060	R	10	12	July	No	None	46	\$75	Jan
HAWAII														
Queen's Hospital ⁺	Honolulu	NPAssn	314	..	..,10,301	R	7	18	Quarterly	(128)	None	62	\$45-90	Jan
PHILIPPINES														
Philippine General Hospital ¹	Manila	Gov't	778	92	92,23,731	R	107(ff)	12	March	No	Req	73	No	.....
PUERTO RICO														
Bayamon Charity District Hospital ¹	Bayamon	Gov't	314	100	100,.....	R	5	12	July	No	Req	61	\$700yr	Jan
Presbyterian Hospital ¹	San Juan	Church	137	57	57,2,353	R	4	12	July	No	Req	25	\$10	Dec

Numerical and other references will be found on page 762

HOSPITALS APPROVED FOR INTERNSHIPS IN THE DOMINION OF CANADA

For the benefit of graduates of approved medical colleges who desire an internship in Canada, the Council on Medical Education and Hospitals of the American Medical Association has declared that hospitals which conform to the standards of the Department of Hospital Service of the Canadian Medical Association should be regarded as giving an internship equivalent in educational value to that offered by hospitals in the United States approved for intern training by the Council. It is understood, however, that this statement applies only to hospitals that are unqualifiedly "Approved" under the Canadian plan and does not apply to that group referred to as "Commended."

The following list of hospitals, revised to June 1, 1940, has been furnished by the Department of Hospital Service.

Name of Hospital	Location	Name of Hospital	Location	Name of Hospital	Location
Victoria General Hospital	Halifax, N. S.	McKellar General Hospital	Fort William, Ont.	Regina Grey Nuns' Hospital	Regina, Sask.
St. John General Hospital	St. John, N. B.	Hamilton General Hospital	Hamilton, Ont.	Regina General Hospital	Regina, Sask.
Hospital du St. Sacrement	Quebec, Que.	St. Joseph's Hospital	Hamilton, Ont.	St. Paul's	Saskatoon
Hotel Dieu de Quebec	Quebec, Que.	Ottawa Civic Hospital	Ottawa, Ont.	Holy Cross	Edmonton
Hospital of the Infant Jesus	Quebec, Que.	Ottawa General Hospital	Ottawa, Ont.	Edmonton General Hospital	Edmonton, Alta.
Jeffrey Hale's Hospital	Quebec, Que.	Kingston General Hospital	Kingston, Ont.	Misericordia Hospital	Edmonton, Alta.
Children's Memorial Hosp.	Montreal, Que.	Hospital for Sick Children	Toronto, Ont.	Royal Alexandra Hospital	Edmonton, Alta.
" "	Que.	Mount Sinai Hospital	Toronto, Ont.	University of Alberta Hosp.	Edmonton, Alta.
" "	Que.	St. Joseph's Hospital	Toronto, Ont.	St. Paul's Hospital	Vancouver, B. C.
" "	Que.	St. Michael's Hospital	Toronto, Ont.	Vancouver General Hospital	Vancouver, B. C.
" "	Que.	Toronto East General Hosp.	Toronto, Ont.	Royal Jubilee Hospital	Victoria, B. C.
" "	Que.	Toronto General Hospital	Toronto, Ont.	St. Joseph's Hospital	Victoria, B. C.
Jewish General Hospital	Montreal, Que.	Toronto Western Hospital	Toronto, Ont.		
Montreal General Hospital	Montreal, Que.	Women's College Hospital	Toronto, Ont.		
Royal Victoria Hospital	Montreal, Que.	Brantford General Hospital	Brantford, Ont.		
St. Mary's Hospital	Montreal, Que.	St. Joseph's Hospital	London, Ont.		
Woman's General Hospital	(Westmount)	Victoria Hospital	London, Ont.		
		Metropolitan General Hosp.	Windsor, Ont.		

NOTES

- * Majority of patients available for teaching purposes.
- † Internships available for one year beginning July 1, 1940; thereafter internships depend upon appropriations by Congress.
- (a) In lieu of maintenance.
- (b) Salary established by government pay tables.
- (c) \$30 per month second year.
- (d) Bonus of \$60.
- 1. Women interns admitted.
- 2. Women interns only.
- 3. Dental interns employed.
- (e) Bonus of \$100.
- (f) January, March, July, September, November.
- (g) Bonus of \$120.
- (h) Bonus of \$180.
- (i) Bonus of \$10.
- (j) Senior internships available.
- (k) Bonus of \$25.
- (l) Every two months.
- (m) Bonus of \$50.
- (n) Bonus of \$300.
- (o) Bonus of \$150.
- (p) Bonus of \$75.
- (q) Bonus of \$24.
- (r) Every six weeks.
- (u) \$10 per month second year.
- (w) \$25 per month first year; \$50 per month second year; bonus of \$100.
- (x) Bonus of \$200.
- (y) \$20 per month second year.
- (z) Bonus of \$125.
- (aa) Bonus of \$30.
- (bb) February, June, July, October.
- (cc) Bonus of \$250.
- (dd) \$15 per month first year; \$30 per month second year; bonus of \$60 each year.
- (ee) Bonus of \$240.
- (ff) All internships reserved for the fifth year students of the College of Medicine, University of the Philippines.

Affiliation as Referred to in Column Headed: "Affiliated Service"

4. Patton State Hospital, Patton, psychiatry.
5. California Babies Hospital, Georgia Receiving Hospital, Los Angeles, pediatrics, emergency.
6. Los Angeles Maternity Service.
7. Children's Hospital, Los Angeles Maternity Service.
8. Fairmont Hospital, San Leandro, and Arroyo-Del Valle Sanatorium, Livermore, medicine, surgery, tuberculosis.
9. Mercy Hospital, San Diego, obstetrics, gynecology, pediatrics.
10. Laguna Honda Home Infirmary, San Francisco, chronic diseases; Hassler Health Home, Redwood City, tuberculosis.
11. St. Francis Hospital, Stanford University Hospitals, San Francisco, obstetrics, pediatrics.
12. Franklin Hospital, San Francisco, obstetrics, gynecology, pediatrics.
13. Santa Barbara General Hospital, outpatient service.
14. Boulder County Hospital, Boulder, obstetrics, surgery; Porter Sanitarium and Hospital, Denver, general.
15. Gallinger Municipal Hospital, Washington, pediatrics, tuberculosis, communicable diseases.
16. Gallinger Municipal Hospital, Children's Hospital, Washington, obstetrics, pediatrics.
17. Grady Hospital, Atlanta.
18. De Paul Hospital, St. Louis, pathology.
19. Misericordia Hospital and Home for Infants, Chicago, obstetrics.
20. Municipal Contagious Disease Hospital, Chicago; Winfield Sanatorium, Winfield, tuberculosis.
21. Chicago Maternity Center, obstetrics, gynecology, pediatrics.
22. East Moline State Hospital, psychiatry; Rock Island County Tuberculosis Sanatorium.
23. Rockford Municipal Tuberculosis Sanatorium.
24. Rotation service established between Broadlawn and approved private hospitals.
25. Watkins Memorial Hospital, Lawrence.
26. Sedgwick County Hospital, Wichita, general, outpatient service.
27. Salvation Army Home and Hospital, Sedgwick County Hospital, Wichita, obstetrics, general.
28. Children's Free Hospital, Louisville City Hospital, pediatrics, obstetrics, gynecology.
29. Children's Free Hospital, Louisville, pediatrics; Waverly Hills Sanatorium, Waverly Hills, tuberculosis.
30. Charity Hospital, New Orleans, obstetrics, gynecology, pediatrics.
31. Shreveport Charity Hospital, obstetrics.
32. Johns Hopkins Hospital, Baltimore, pathology.
33. University Hospital, Baltimore, pathology.
34. University Hospital, Sydenham Hospital, Baltimore, pediatrics, obstetrics, communicable diseases.
35. James Lawrence Kernan Hospital and Industrial School for Crippled Children, Baltimore.
36. Sydenham Hospital, Baltimore, communicable diseases.
37. Boston City Hospital, neurosurgery.
38. Children's Hospital, Boston, pediatrics; Worcester State Hospital, Worcester, psychiatry.
39. Evangeline Booth Maternity Hospital and Home, Boston.
40. Norfolk County Hospital, South Braintree, tuberculosis.
41. Shriners Hospital for Crippled Children, Health Department Hospital, Wesson Maternity Hospital, Springfield, orthopedics, communicable diseases, obstetrics.
42. Health Department Hospital, Wesson Maternity Hospital, Springfield, communicable diseases, obstetrics.
43. Herman Kiefer Hospital, Detroit.
44. Herman Kiefer Hospital, Children's Hospital, Detroit, communicable diseases, tuberculosis, obstetrics, orthopedics.
45. Herman Kiefer Hospital, Detroit, communicable diseases, tuberculosis; St. Joseph's Retreat, Dearborn, neurology.
46. Kalamazoo State Hospital, Kalamazoo, psychiatry.
47. Ingham Sanatorium, Lansing tuberculosis; Jackson County Isolation Hospital, Jackson, communicable diseases.
48. Ingham Sanatorium, Boys' Vocational School Hospital, Lansing, tuberculosis.
49. Pontiac State Hospital, Pontiac, tuberculosis.
50. Miller Memorial Hospital, Duluth, outpatient service.
51. Gillette State Hospital for Crippled Children, St. Paul.
52. Shriners Hospital for Crippled Children, Minneapolis.
53. Children's Hospital, St. Paul, pediatrics.
54. Gillette State Hospital for Crippled Children; Charles T. Miller Hospital, St. Paul, outpatient service.
55. Kansas City Municipal Tuberculosis Hospital.
56. Shriners Hospital for Crippled Children, City Isolation Hospital, St. Louis Children's Hospital, Barnard Free Skin and Cancer Hospital, St. Louis.
57. Jewish Sanatorium, Robertson, tuberculosis; City Isolation Hospital, St. Louis, communicable diseases; St. Louis City Hospital, psychiatry.
58. Alexian Brothers Hospital, St. Louis, outpatient service.
59. Robert Koch Hospital, City Isolation Hospital, St. Louis, tuberculosis, communicable diseases.
60. Robert Koch Hospital, City Isolation Hospital, City Sanitarium, St. Louis, tuberculosis, communicable diseases, psychiatry.
61. St. Elizabeth Hospital, Elizabeth, obstetrics, gynecology, pediatrics.
62. Bergen Pines, Bergen County Hospital, Ridgewood, tuberculosis, communicable diseases.
63. Margaret Hague Maternity Hospital, Hudson County Tuberculosis Hospital, Jersey City.
64. Margaret Hague Maternity Hospital, Jersey City.
65. New Jersey State Hospital, Marlboro, psychiatry.
66. Fairview Sanatorium, New Lisbon, tuberculosis.
67. Anthony N. Brady Maternity Hospital, Albany.
68. Kingston Avenue Hospital, Brooklyn, communicable diseases.
69. Brooklyn Thoracic Hospital, tuberculosis.
70. Emergency Hospital of the Sisters of Charity, St. Mary's Infant Asylum and Maternity Hospital, Providence Retreat, Buffalo.
71. Edward J. Meyer Memorial Hospital, Buffalo, pediatrics, communicable diseases, psychiatry.
72. Lincoln Hospital, New York City, obstetrics.
73. Binghamton State Hospital, Binghamton, psychiatry.
74. Ulster County Tuberculosis Hospital, Kingston.
75. Jewish Maternity Hospital, New York City.
76. Berwind Free Maternity Clinic, New York City; New York State Hospital, Ray Brook, tuberculosis.
77. Strong Memorial Hospital, Rochester, surgery.
78. Misericordia Hospital, New York City, obstetrics, pediatrics.
79. Rotation service established between Hospital of the Good Shepherd, Syracuse Memorial Hospital, City Hospital and Syracuse Psychopathic Hospital.
80. Cass County Hospital, Fargo, obstetrics, otolaryngology.
81. Children's Hospital, Akron, pediatrics.
82. Molly Stark Sanatorium, Canton, tuberculosis; Massillon State Hospital, Massillon, psychiatry.
83. Children's Hospital, Cincinnati, pediatrics.
84. Hamilton County Tuberculosis Sanatorium, Hamilton County Home and Chronic Disease Hospital, Cincinnati.
85. Longview State Hospital, Cincinnati, psychiatry.
86. Cincinnati General Hospital, pediatrics, otolaryngology.
87. St. Ann's Maternity Hospital, Cleveland.
88. Children's Hospital, Columbus, pediatrics.
89. St. Ann's Infant Asylum and Maternity Hospital, Children's Hospital, Columbus, obstetrics, pediatrics.
90. Children's Hospital, Columbus State Hospital, pediatrics, psychiatry.
91. Stillwater Sanatorium, Dayton, tuberculosis.
92. Shriners Hospital for Crippled Children, Portland.
93. Hospital of the University of Pennsylvania, Philadelphia, obstetrics.
94. Philadelphia Hospital for Contagious Diseases.
95. Children's Hospital of the Mary J. Drexel Home, Philadelphia, pediatrics.
96. Henry Phipps Institute of the University of Pennsylvania, Philadelphia, tuberculosis.
97. Children's Hospital, Philadelphia, pediatrics.
98. Shriners Hospital for Crippled Children, Philadelphia Hospital for Contagious Diseases.
99. St. Vincent's Hospital for Women and Children, Philadelphia, obstetrics, gynecology, pediatrics.
100. Pennsylvania Hospital, Department for Mental and Nervous Diseases, Philadelphia.
101. Roselia Foundling and Maternity Hospital, Municipal Hospital for Contagious Diseases, Pittsburgh.
102. Elizabeth Steel Magee Hospital, Children's Hospital, Eye and Ear Hospital, Woman's Hospital, Pittsburgh.
103. Municipal Hospital for Contagious Diseases, Pittsburgh.
104. Berks County Tuberculosis Sanatorium, Reading.
105. Scranton State Hospital, obstetrics.
106. Providence Lyng-In Hospital.
107. T. C. Thompson Children's Hospital, Pine Breeze Sanatorium, Chattanooga, pediatrics, tuberculosis.
108. Willard Parker Hospital, New York City, pediatrics.
109. Woodlawn Hospital, Dallas, tuberculosis.
110. Houston Tuberculosis Hospital.
111. Salvation Army Women's Home, Mission Home, San Antonio, obstetrics.
112. St. Mary's Group of Hospitals includes the Firmin Desloge Hospital, St. Mary's Hospital and Mount St. Rose Sanatorium.
113. Gulf, Colorado and Santa Fe Hospital, Temple, general.
114. Utah State Hospital, Provo, psychiatry, general medicine.
115. Blue Ridge Sanatorium, Charlottesville, tuberculosis.
116. Henry A. Wise Hospital for Contagious Diseases, Norfolk.
117. Norfolk General Hospital, Florence Crittenton Home, Children's Clinic of the Kings Daughters, Norfolk, obstetrics, pediatrics.
118. Pine Camp Hospital, Brook Hill, tuberculosis; Crippled Children's Hospital, Richmond.
119. King County Hospital, Seattle, outpatient service; Firland Sanatorium and Isolation Hospital, Richmond Highlands, tuberculosis.
120. King County Hospital, Seattle.
121. Firland Sanatorium and Isolation Hospital, Richmond Highlands, tuberculosis, communicable diseases; Children's Orthopedic Hospital, Seattle, pediatrics, orthopedics.
122. Edgecliff Sanatorium, Spokane, tuberculosis.
123. Edgecliff Sanatorium, Salvation Army Women's Hospital and Home, Spokane, obstetrics.
124. Mount W. Hospital, Eau Claire, tuberculosis.
125. Milwaukee Hospital, Milwaukee, South View Hospital, Milwaukee, pediatrics, communicable diseases; Sunny View Sanatorium, Winnebago, tuberculosis.
126. Milwaukee Children's Hospital, pediatrics.
127. South View Hospital, Milwaukee, communicable diseases.
128. Kaulkeolant Children's Hospital, Honolulu.
129. Ingham Sanatorium, Lansing, tuberculosis.
130. Woman's Hospital, Pasadena, obstetrics.
131. Western Oklahoma Tuberculosis Sanatorium, Clinton.

APPROVED RESIDENCIES AND FELLOWSHIPS

Council on Medical Education and Hospitals of the American Medical Association

Hospitals, 587; Residencies, 4,392; Fellowships, 726

The following institutions approved by the Council on Medical Education and Hospitals are considered in position to furnish acceptable training in various specialties as indicated below. Residencies in specialties, as defined by the Council, are straight services of one or more years following an approved internship. A fellowship is a form of apprenticeship which in some cases is indistinguishable from a residency, although it usually offers greater opportunity for the study of basic sciences and research. Ordinarily a fellowship is a university rather than a hospital appointment. Mixed residencies are general hospital assignments following internship. They include services classified as general residencies and chief residencies.

The star (*) indicates hospitals that are also approved for the training of interns. All hospitals on the approved intern list are likewise accredited for general or mixed residencies.

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1. ANESTHESIOLOGY

Revision of list is now taking place in collaboration with the American Board of Anesthesiology

		Chief of Service	Inpatients Treated	Total Anesthetics	Inhalation Anesthetics	Beginning Salary	Residents	Assistant Residents	Fellowships	Service Begins	Length of Service (Years)	Deaths	Autopsies
Los Angeles County Hospital * ¹	Los Angeles.....	A. E. Guedell.....	50,715	12,202	4,872	\$75	2	0	0	1/1	1	3,968	2,025
White Memorial Hospital * ¹	Los Angeles.....	L. D. Lee.....	7,024	4,176	1,517	\$80	1	0	0	7/1	1-3	225	96
Stanford University Hospital * ¹	San Francisco.....	A. Dutton.....	9,037	4,926	3,296	\$25	0	2	0	7/1	1+	213	122
Hartford Hospital * ¹	Hartford, Conn.....	R. M. Tovell.....	16,015	11,927	7,185	\$50	8	0	0	1/1&7/1	2	570	276
University Hospital * ¹	Augusta, Ga.....	P. P. Volpitta.....	8,057	1,700	1,200	\$25	1	0	0	7/1	1-2	400	157
Michael Reese Hospital * ¹	Chicago.....	B. B. Lennon.....	17,570	13,496	11,022	\$50	2	0	0	7/1	2	520	303
Research and Educational Hospital * ¹	Chicago.....	W. H. Cassels.....	5,831	1,257	1,068	\$50	2	0	0	7/1&9/1	1-3	203	178
University of Chicago Clinics * ¹	Chicago.....	H. L. Adams.....	10,776	3,426	2,098	\$100	1	4	0	7/1	1-2	243	186
Methodist Hospital * ¹	Indianapolis.....	J. M. Whitehead.....	23,917	11,864	9,237	\$75	1	2	0	7/1	1-2	514	164
University Hospitals * ¹	Iowa City.....	S. C. Cullen.....	19,176	8,697	4,423	\$50	1	4	0	7/1	3	511	306
Boston City Hospital * ¹	Boston.....	W. A. Noonan.....	42,903	9,965	4,557	\$50	1	1	0	Varies	1+	2,093	800
Lahey Clinic.....	Boston.....	P. D. Woodbridge.....	7,640	7,595	3,501	\$100	0	0	4	1/1&7/1	2-3	181	86
Massachusetts General Hospital * ¹	Boston.....	H. K. Beecher.....	15,352	10,574	5,396	\$42	1	0	0	7/1	1	547	228
Massachusetts Memorial Hospitals * ¹	Boston.....	E. F. Howard.....	7,572	3,658	2,209	\$50	2	0	0	1/1&7/1	1	173	118
Harper Hospital * ¹	Detroit.....	F. J. Murphy.....	17,089	11,869	6,201	\$45	0	1	0	7/1	1	441	113
University Hospitals * ¹	Minneapolis.....	R. Knight.....	9,530	4,593	3,298	\$50	0	0	2	7/1	1-3	450	323
Mayo Foundation.....	Rochester, Minn.....	(See page 784)											
Jersey City Hospital * ¹	Jersey City, N. J.....		17,642	7,160	4,508	\$100	1	1	0	7/1	1	1,120	181
Albany Hospital * ¹	Albany, N. Y.....	F. A. D. Alexander.....	12,200	4,891	4,392	\$50	1	2	0	7/1	1	452	303
Bellevue Hospital * ¹	New York City.....	E. A. Roventine.....	64,506	.....	.....	Varies \$11	0	0	0	Varies	3	2,505	786
Flower-Fifth Avenue Hospital * ¹	New York City.....	D. E. Brace.....	8,810	4,514	3,538	\$50	1	0	0	7/1	1	215	77
French Hospital * ¹	New York City.....	S. Lesinger.....	5,847	3,216	2,154	\$50	1	0	1	10/1	1	189	63
Lincoln Hospital * ¹	New York City.....	P. M. Wood.....	9,666	4,263	3,050	\$100	2	0	0	7/1	1-2	812	267
Metropolitan Hospital * ¹	New York City.....	D. E. Brace.....	13,151	4,539	2,972	\$100	3	0	0	7/1	1+	959	263
New York Post-Graduate Medical School and Hospital * ¹	New York City.....	M. C. Peterson.....	9,146	5,323	4,450	\$50	1	4	0	7/1&11/1	2	258	109
Presbyterian Hospital * ¹	New York City.....	V. Appar.....	17,449	9,984	9,000	\$50	5	0	0	Varies	1	538	262
St. Luke's Hospital * ¹	New York City.....	G. E. Burford.....	8,457	6,964	3,652	\$100	4	0	0	Varies	1-3	208	109
St. Vincent's Hospital * ¹	New York City.....	G. H. Van Gillewe.....	10,197	2,569	1,910	\$75	1	1	0	7/1	1	415	156
Grasslands Hospital * ¹	Valhalla, N. Y.....	R. B. Hammond.....	5,798	1,502	934	\$75	1	1	0	7/1	1	484	330
Huron Road Hospital * ¹	East Cleveland, O.....	R. J. Whitacre.....	8,371	5,759	3,601	\$40	1	1	0	7/1	1-2	229	108
State University and Crippled Children's Hospitals * ¹	Oklahoma City.....	H. E. Doudna.....	6,532	3,756	3,167	\$50	3	0	0	7/1	1	270	149
University of Oregon Medical School Hospitals and Clinics * ¹	Portland.....	J. Hutton.....	7,569	4,746	3,854	\$40	2	0	0	7/1	2	619	407
Hahnemann Hospital * ¹	Philadelphia.....	J. M. Godfrey.....	12,407	7,210	4,742	\$50	2	0	0	9/1	1	615	235
Presbyterian Hospital * ¹	Philadelphia.....	J. P. North.....	5,378	3,250	2,900	\$50	1	0	0	6/1	1+	248	204
Rhode Island Hospital * ¹	Providence.....	M. Saklad.....	7,890	6,182	3,391	\$50	3	0	0	7/1	2	525	289
State of Wisconsin General Hospital * ¹	Madison.....	R. M. Waters.....	12,263	4,963	4,208	\$25	3	3	0	7/1	3	353	227
Columbia Hospital * ¹	Milwaukee.....	H. A. Cunningham.....	3,561	.....	.....	\$50	1	0	0	7/1	1	112	63

2. CARDIOLOGY

		Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Visits	Beginning Salary	Residents	Assistant Residents	Fellowships	Service Begins	Length of Service (Years)	Deaths	Autopsies
Indiana University Medical Center * ¹	Indianapolis.....	G. S. Bond.....	.....	80	245	\$33	1	0	0	7/1	1-2	...	...
House of the Good Samaritan.....	Boston.....	W. D. Smith.....	246	100	793	\$50	1	0	0	7/1	1-3	16	8
Henry Ford Hospital * ¹	Detroit.....	F. J. Smith.....	671	25	6,318	\$130	1	0	0	7/1	1-3	76	29
Pennsylvania Hospital * ¹	Philadelphia.....	W. D. Stroud.....	.....	26	4,016	\$35	0	0	1	7/1	1-2	...	...
St. Francis Hospital * ¹	Pittsburgh.....	B. Z. D'Zmura.....	437	89	46	\$30	1	0	0	9/1	1	108	10
Rhode Island Hospital * ¹	Providence.....	F. T. Fulton.....	2,928	65	826	\$50	1	0	0	7/1	1	...	...

Numerical and other references will be found on page 784.

3. COMMUNICABLE DISEASES

		Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Visits	Beginning Salary	Residents	Assistant Residents	Fellow- ships	Service Beginns	Length of Service (Years)	Deaths	Autopsies
Los Angeles County Hospital * ¹	Los Angeles.....	P. Hamilton	3,215	100	.....	\$175	3	0	0	Varies	1+	180	84
Hospital for Children * ²	San Francisco.....	E. B. Shaw.....	228	4	.....	\$50	0	0	1	7/1	1	10	4
Municipal Hospitals *.....	Hartford, Conn.....	C. Thenebe.....	546	..	.....	\$125	1	0	0	7/1	1	19	5
Cook County Hospital * ¹	Chicago.....	A. L. Hoyne.....	175	63	9,500	None	1	0	1	7/1	1-3	3	3
Municipal Contagious Disease Hospital.....	Chicago.....	A. L. Hoyne.....	4,223	99	.....	\$100	6	0	0	1/1&7/1	..	100	73
Sydenham Hospital * ¹	Baltimore.....	H. L. Hodes.....	1,263	85	.....	\$40	1	1	0	7/1	1	67	39
Boston City Hospital * ¹	Boston.....	E. H. Place.....	1,378	89	.....	\$125	2	0	0	Varies	1+	11	1
Belmont Hospital * ¹	Worcester, Mass.....	F. H. Knowlton.....	576	..	.....	\$133	1	0	0	Varies	1-3	15	6
Herman Kiefer Hospital.....	Detroit.....	D. C. Young.....	3,467	98	.....	\$150	5	0	0	7/1	1-3	57	41
Kansas City General Hospital *.....	Kansas City, Mo.....	C. R. Ferris.....	490	100	.....	\$80	1	1	0	7/1	1	23	13
City Isolation Hospital.....	St. Louis.....	G. S. Bozalis.....	1,464	98	.....	\$75	1	1	0	7/1	1	60	50
Essex County Hospital for Contagious Diseases	Belleville, N. J.....	W. H. Areson.....	2,896	90	.....	\$50	2	0	0	1/1&7/1	1	49	27
Kingston Avenue Hospital.....	Brooklyn.....	M. B. Gordon.....	2,393	100	.....	\$100	6	0	0	1/1&7/1	1-2	60	33
Queens General Hospital * ¹	Jamaica, N. Y.....	H. A. Reisman.....	553	100	.....	\$100	2	0	0	7/1	1	20	16
Willard Parker Hospital *.....	New York City.....	B. W. Hamilton.....	4,034	97	.....	\$100	7	0	0	1/1&7/1	1	53	31
City Hospital *.....	Cleveland.....	H. J. Gerstenberger.....	2,119	92	.....	\$42	1	1	0	7/1	1	90	47
Philadelphia Hospital for Contagious Diseases	Philadelphia.....	P. F. Lucchesi.....	2,216	60	.....	\$166	1	2	0	Varies	1+	45	21

4. DERMATOLOGY AND SYPHILOLOGY

The following services are approved by the Council and the American Board of Dermatology and Syphilology:

Research and Educational Hospital *.....	Chicago.....	F. E. Seneau.....	37	100	14,726	\$50	1	0	0	9/1	3	2	2
Massachusetts General Hospital *.....	Boston.....	C. G. Lane.....	360	48	54,945	None	1	1	1	7/1	1-3	12	7
University Hospital *.....	Ann Arbor, Mich.....	U. J. Wile.....	1,524	74	13,182	\$25	2	2	1	7/1	4	7	4
Minneapolis General Hospital *.....	Minneapolis.....	S. E. Sweitzer.....	308	86	25,174	\$25	0	0	3	7/1	3	1	1
University Hospitals *.....	Minneapolis.....	H. E. Michelson.....	361	75	9,051	\$50	0	0	2	7/1	2-3	2	2
Mayo Foundation	Rochester, Minn.....	(See page 784)											
Bellevue Hospital *.....	New York City.....	F. C. Combes.....	1,011	100	59,171	\$15	1	2	0	1/1&7/1	1-3	19	1
Columbia-Presbyterian Medical Center *.....	New York City.....	J. G. Hopkins.....	31	31	50,378	\$150	0	0	1	Varies	1-3	...	2
New York Post-Graduate Medical School and Hospital *.....	New York City.....	G. M. MacKee.....	36	16	114,813	None	1	2	5	1/1&7/1	2-3	...	...
Duke Hospital *.....	Durham, N. C.....	J. L. Callaway.....	175	63	9,500	None	1	0	1	7/1	1-3	3	3
Cincinnati General Hospital *.....	Cincinnati.....	E. B. Tauber.....	66	87	27,300	\$25	1	2	0	7/1	3-4	8	6
City Hospital *.....	Cleveland.....	H. N. Cole.....	45	92	30,793	\$42	1	1	0	7/1	1-4	12	9
University Hospitals *.....	Cleveland.....	H. N. Cole.....	129	28	32,506	\$25	1	1	0	7/1	2-3	2	2
Graduate Hospital of the University of Pennsylvania *.....	Philadelphia.....	F. D. Weidman.....	50	61	24,813	None	0	0	1	6/1	3	...	...

The following services, approved by the Council, are now being reviewed in collaboration with the American Board of Dermatology and Syphilology:

Los Angeles County Hospital * ¹	Los Angeles.....	K. Frost	524	100	45,136	\$10	2	0	0	7/1	3	18	8
University of California Hospital * ¹	San Francisco.....	W. J. Kerr.....	14	53	9,046	\$25	0	2	0	7/1	1+	...	...
Georgetown University Hospital *.....	Washington, D. C.....	F. Eichenlaub.....	62	28	9,952	\$75	0	0	1	7/1	2	2	...
University of Chicago Clinics *.....	Chicago.....	S. W. Becker.....	.....	36	14,287	None	1	2	2	1/1&7/1	1-3	...	...
University Hospitals * ¹	Iowa City.....	R. Nomland.....	284	87	2,438	\$21	1	1	0	7/1	1-6	4	3
Boston City Hospital * ¹	Boston.....	W. P. Boardman.....	176	89	44,570	\$100	1	0	0	Varies	1+	1	2
Barnard Free Skin and Cancer Hospital	St. Louis.....	M. F. Engman.....	54	100	11,380	\$25	1	0	0	7/1	1	2	1
Kings County Hospital *.....	Brooklyn.....	A. Potter.....	758	100	25,101	\$100	1	0	0	10/1	1	19	3
Edward J. Meyer Memorial Hospital (Buffalo City Hospital) *.....	Buffalo.....	E. Osborne.....	498	85	34,854	\$59	0	2	1	7/1	3-4	5	2
Metropolitan Hospital * ¹	New York City.....	F. M. Dearborn.....	136	..	20,436	\$15	1	0	0	7/1	1+	4	0
Montefiore Hosp. for Chronic Diseases * ¹	New York City.....	F. Wise.....	24	87	.....	\$25	1	0	0	7/1	1	1	3
New York City Hospital *.....	New York City.....	J. J. Eller.....	924	100	23,717	\$100	1	0	0	7/1	1	21	3
Skin and Cancer Hospital.....	Philadelphia.....	A. Strickler.....	177	73	52,118	\$30	1	0	0	12/1	1-2	11	4
Pittsburgh Skin and Cancer Foundation	Pittsburgh.....	L. Hollander.....	.....	95	38,000	\$150	2	0	0	7/1	3	...	...
University of Virginia Hospital *.....	Charlottesville.....	D. C. Smith.....	158	27	10,203	\$50	1	1	1	7/1	1	2	1

5. EPILEPSY

Monson State Hospital.....	Palmer, Mass.....	H. S. Tait.....	1,544	45	\$10	1	0	0	Varies	1	78	35
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6. FRACTURES

Denver General Hospital * ¹	Denver.....	H. W. Wilcox.....	582	100	8,767	\$50	1	0	0	7/1	1	78	59
City of Detroit Receiving Hospital *.....	Detroit.....	A. D. La Ferte.....	1,176	100	14,012	\$83	1	1	0	7/1	2	43	14
Presbyterian Hospital *.....	New York City.....	W. Darrach.....	501	31	12,344	\$50	1	1	0	1/1&7/1	1	3	0
Rhode Island Hospital *.....	Providence.....	M. S. Danforth.....	545	65	7,459	\$50	1	0	0	7/1	1	36	12

7. GYNECOLOGY

Revision of list is now taking place in collaboration with the American Board of Obstetrics and Gynecology

Hospital for Children * ²	San Francisco.....	H. A. Stephenson.....	458	4	1,148	\$25	0	1	0	7/1	1	2	1
Passavant Memorial Hospital *.....	Chicago.....	A. H. Curtis.....	629	14	240	None	1	0	0	1/1&7/1	1	5	3
Indiana University Medical Center * ¹	Indianapolis.....	C. Habich.....	798	80	3,021	\$33	1	0	0	7/7	1	10	6
Touro Infirmary * ¹	New Orleans.....	H. E. Miller.....	1,153	35	5,218	\$25	1	0	0	7/1	1	16	6
Johns Hopkins Hospital *.....	Baltimore.....	R. W. TeLinde.....	1,865	45	14,056	None	1	4	0	7/1&9/1	1-5	14	9
University Hospital * ¹	Baltimore.....	J. M. Hundley, Jr.....	700	50	7,189	\$25	1	1	0	7/1	1-4	31	20
Free Hospital for Women.....	Brookline, Mass.....	F. A. Pemberton.....	2,539	76	15,616	\$83	1	3	0	1/1	1	45	1
Jersey City Hospital *.....	Jersey City, N. J.....	.....	732	90	2,031	\$75	1	1	0	7/1	1	20	12
Albany Hospital * ¹	Albany, N. Y.....	A. J. Wallingford.....	2,095	3	1,099	\$25	1	1	0	7/1	1	26	11
Buffalo General Hospital *.....	Buffalo.....	J. E. King.....	1,445	9	.....	\$25	0	1	0	7/1	1	47	4
Harlem Hospital * ¹	New York City.....	H. C. Falk.....	1,407	100	18,724	\$15	1	1	0	1/1&7/1	1	...	...
Mount Sinai Hospital * ^{1,10}	New York City.....	.....	.....	55	.....	\$50	1	1	1	1/1&7/1	1	...	...
New York Polyclinic Medical School and Hospital *.....	New York City.....	.....	841	12	4,884	None	1	0	0	7/1	2	9	2
New York Post-Graduate Medical School and Hospital *.....	New York City.....	W. T. Dannreuther.....	512	16	27,602	\$30	1	0	0	10/1	1	7	1
Syracuse Memorial Hospital *.....	Syracuse, N. Y.....	N. P. Sears.....	666	30	.....	None	1	0	0	7/1	1	6	3
University Hospitals * ¹	Cleveland.....	W. H. Weir.....	1,411	28	9,574	\$25	1	3	0	7/1	2	19	9
Starling-Loving University Hospital *.....	Columbus, O.....	F. Fletcher.....	428	59	3,161	\$25	1	1	0	7/1	1-2	3	1
Graduate Hospital of the University of Pennsylvania *.....	Philadelphia.....	W. R. Nicholson.....	592	61	3,735	None	1	0	0	7/1	1	12	4
Woman's Hospital *.....	Philadelphia.....	.....	377	48	1,970	\$25	1	0	0	9/1	1-2	2	2
Elizabeth Steel Magee Hospital.....	Pittsburgh.....	B. Z. Cashman.....	1,483	40	2,617	\$42	1	1	0	9/1	1-5	24	16
St. Francis Hospital *.....	Pittsburgh.....	B. Z. Cashman.....	832	20	1,155	\$100	1	0	0	9/1	3	21	7
John Gaston Hospital *.....	Memphis, Tenn.....	W. L. Williamson.....	875	95	11,153	\$65	1	0	0	7/1	1	25	4

8. MALIGNANT DISEASES

		Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Visits	Beginning Salary	Residents	Assistant Residents	Fellow- ships	Service Begins	Length of Service (Years)	Deaths	Autopsies
Los Angeles County Hospital *1.....	Los Angeles.....	H. P. Jacobson.....	1,012	100	17,831	\$10	2	0	0	7/1	3½	208	94
Albert Steiner Clinic for Cancer and Allied Diseases	Atlanta, Ga.....	R. H. Fike.....	577	100	51,408	\$75	1	1	0	7/1	1-2	33	26
Michael Reese Hospital *2s.....	Chicago.....	E. Uhlmann.....	99	43	1,721	.....	12	0	0	1/1&7/1	3	...	...
Collis P. Huntington Memorial Hospital	Boston.....	O. C. Simmons.....	5,284	18	14,878	\$125	1	0	2	9/1	1-5	12	8
New England Deaconess Hospital *	Boston.....	.....	2,220	5	2,950	\$83	12	0	0	1/1&7/1	1	104	59
Westfield State Sanatorium.....	Westfield, Mass.....	C. M. Binnig.....	762	.....	5,980	\$150	3	0	0	Varies	1+	75	67
Pondville Hospital at Norfolk.....	Wrentham, Mass.....	E. M. Daland.....	1,711	47	6,803	\$150	8	0	0	Varies	1	256	177
Eloise Hospital and Infirmary *	Eloise, Mich.....	.....	655	99	235	\$67	1	0	0	7/1	1-2	261	118
Barnard Free Skin and Cancer Hospital	St. Louis.....	.....	928	100	10,088	\$25	2	0	0	7/1	1	15	4
Jersey City Hospital *	Jersey City, N. J.....	.....	609	90	3,759	None	1	1	0	7/1	1-2	96	18
Brooklyn Cancer Institute.....	Brooklyn.....	W. E. Howes.....	918	.....	7,602	\$75	6	0	3/1, 7/1, 11/1	1	189	48	
Meadowbrook Hospital *	Hempstead, N. Y.....	R. Derby.....	415	90	3,291	\$100	1	0	0	7/1	1	97	41
Memorial Hospital for the Treatment of Cancer and Allied Diseases.....	New York City.....	.....	3,012	..	61,024	\$125	4	9	10	1/1&7/1	3	135	75
New York City Cancer Institute Hosp.....	New York City.....	I. I. Kaplan.....	1,293	100	12,975	\$15	4	4	0	1/1&7/1	1	499	79
Duke Hospital *	Durham, N. C.....	R. R. Jones.....	951	63	1,636	\$42	1	0	0	7/1	1-3	67	42
American Oncologic Hospital.....	Philadelphia.....	G. M. Dorrance.....	580	58	7,589	\$100	2	0	1	7/1	1	42	24
Jeanes Hospital 1	Philadelphia.....	R. A. Teahan.....	643	27	7,248	\$50	2	0	0	7/1	3	79	57

9. MEDICINE

Revision of list is now taking place in collaboration with the American Board of Internal Medicine and the American College of Physicians

Hillman Hospital *.....	Birmingham, Ala.....	J. S. McLester and H. R. Carter	2,282	100	21,148	\$50	2	0	0	7/1	1	448	25
Employees' Hospital of the Tennessee Coal, Iron and Railroad Company *.....	Fairfield, Ala.....	G. F. Walsh.....	1,921	..	11,351	\$150	1	0	0	7/1	1	180	89
Baptist State Hospital *.....	Little Rock, Ark.....	J. N. Compton.....	1,307	23	.....	\$100	1	0	0	7/1	2	88	21
General Hospital of Fresno County *.....	Fresno, Calif.....	R. B. Tupper and W. E. R. Schottstaedt.....	2,629	100	.....	\$65	1	0	0	7/1	1	372	105
Cedars of Lebanon Hospital *1.....	Los Angeles.....	...	1,676	29	8,794	\$75	1	0	0	7/1	1	130	36
Los Angeles County Hospital *1.....	Los Angeles.....	E. R. Ware.....	8,897	100	121,034	\$10	18	0	0	7/1	3	1,683	696
White Memorial Hospital *.....	Los Angeles.....	W. E. Macpherson.....	1,194	3	20,761	\$50	1	0	0	7/1	1-3	87	41
Alameda County Hospital *1.....	Oakland, Calif.....	R. T. Sutherland and H. G. MacLean.....	2,517	92	.....	\$40	1	2	0	7/1	1-3	440	233
Collis P. and Howard Huntington Me- morial Hospital *.....	Pasadena, Calif.....	W. R. Heard.....	1,478	6	120	\$100	1	0	0	7/1	1	140	60
San Diego County General Hospital *.....	San Diego, Calif.....	J. Schlappi.....	5,735	100	3,276	\$50	2	0	0	7/1	1	440	158
Hospital for Children *2.....	San Francisco.....	D. Atkinson.....	470	4	6,048	\$25	0	1	0	7/1	1	24	10
Mount Zion Hospital *.....	San Francisco.....	L. H. Briggs.....	1,091	18	12,887	\$50	1	0	0	6/15	1	119	71
St. Luke's Hospital *.....	San Francisco.....	H. P. Hill.....	1,580	20	.....	\$75	1	0	0	7/1	1	108	44
San Francisco Hospital *1.....	San Francisco.....	L. H. Briggs and G. D. Barnett	2,716	100	.....	\$50	6	0	0	7/1	1	...	...
Stanford University Hospitals *1.....	San Francisco.....	A. Bloomfield.....	1,932	2	19,337	\$25	1	6	0	7/1	1-2	117	60
University of California Hospital *1.....	San Francisco.....	W. J. Kerr.....	1,654	58	35,692	\$25	1	5	0	8/1	1+	75	69
Santa Clara County Hospital *.....	San Jose, Calif.....	G. Gray.....	2,437	100	16,352	\$75	2	0	0	7/1	1	...	...
Fairmont Hospital of Alameda County	San Leandro, Calif.....	R. T. Sutherland and H. G. MacLean.....	1,823	100	8,589	\$75	1	1	0	7/1	1	376	161
Colorado General Hospital *1s.....	Denver.....	J. J. Waring.....	837	57	26,537	\$75	1	0	0	7/1	1	123	93
Denver General Hospital *.....	Denver.....	M. Katzman.....	1,499	100	1,341	\$50	2	0	0	7/1	1-2	325	96
Grace Hospital *.....	New Haven, Conn.....	S. J. Goldberg.....	1,093	18	1,929	\$90	1	0	0	7/1	3	143	51
New Haven Hospital *.....	New Haven, Conn.....	F. G. Blake.....	1,556	37	19,839	...	1	4	0	1/1&7/1	1+	205	127
Central Dispensary and Emergency Hos- pital *.....	Washington, D. C.....	H. M. Kaufman.....	1,216	22	7,423	\$41	1	1	0	6/15	1-3	101	48
Freedmen's Hospital *1.....	Washington, D. C.....	E. C. Terry.....	791	85	7,888	...	1	2	0	7/1&10/1	1-2	147	39
Gallinger Municipal Hospital *.....	Washington, D. C.....	W. M. Yater.....	2,594	99	385	\$25	2	8	0	7/1	1	388	160
Garfield Memorial Hospital *.....	Washington, D. C.....	B. F. Veems.....	2,079	...	3,360	\$50	1	0	0	7/1	1	117	90
Georgetown University Hospital *.....	Washington, D. C.....	W. M. Yater.....	1,201	6	9,577	\$42	1	0	2	7/1	1	95	36
Duval County Hospital *.....	Jacksonville, Fla.....	L. Limbaugh.....	922	100	.....	\$30	1	2	0	7/1	1	211	128
James M. Jackson Memorial Hospital *.....	Miami, Fla.....	...	7,344	53	.....	\$150	1	0	0	7/1	1	595	158
Grady Hospital *.....	Atlanta, Ga.....	...	2,667	100	6,168	\$20	0	4	0	7/1	1+	546	197
St. Joseph Infirmary *.....	Atlanta, Ga.....	J. H. Hines.....	1,630	10	2,632	\$75	1	1	0	7/1	1-2	90	22
University Hospital *1.....	Augusta, Ga.....	V. P. Sydenstricker.....	1,722	29	5,310	\$40	1	2	0	7/1	1	176	73
Emory University Hospital *.....	Emory University, Ga.....	C. W. Strickler and S. R. Roberts.....	1,509	..	.....	\$50	1	0	0	7/1	1	116	65
Cook County Hospital *1.....	Chicago.....	C. C. Maher.....	19,735	100	27,978	\$25	18	0	6	1/1&7/1	3	4,156	585
Mersey Hospital-Loyola University Clinics *.....	Chicago.....	H. Schmitz.....	1,369	26	25,464	\$30	1	0	0	7/1	3	106	28
Michael Reese Hospital *.....	Chicago.....	S. Portis.....	4,188	43	14,232	\$50	2	3	0	1/1&7/1	1	207	93
Mount Sinai Hospital *1.....	Chicago.....	A. Arkin.....	1,336	35	21,352	\$30	1	0	0	7/1	1	117	42
Norwegian-American Hospital *1.....	Chicago.....	D. E. Markson.....	1,275	..	.....	\$25	1	0	0	7/1	1	134	54
Passavant Memorial Hospital *.....	Chicago.....	C. A. Elliott and W. H. Holmes	1,571	14	2,787	None	3	0	1	1/1&7/1	1	81	57
Presbyterian Hospital *.....	Chicago.....	E. E. Irons.....	3,445	13	.....	\$50	2	0	0	1/1	1-2	125	63
Provident Hospital *1.....	Chicago.....	J. L. Hull.....	585	62	20,853	\$50	1	0	1	9/1	1-3	77	21
Research and Educational Hospital *.....	Chicago.....	R. W. Keeton.....	589	100	26,547	\$50	3	0	0	7/1&9/1	1-3	59	51
St. Luke's Hospital *.....	Chicago.....	A. R. Elliott.....	2,629	7	11,472	\$25	3	0	0	7/1	1-3	118	60
University of Chicago Clinics *1.....	Chicago.....	G. F. Dick.....	2,205	36	26,635	None	1	4	13	7/1	1-3	92	63
Wesley Memorial Hospital *.....	Chicago.....	A. A. Goldsmith.....	396	15	.....	\$35	1	0	0	1/1	1	34	22
Evanston Hospital *.....	Evanston, Ill.....	L. D. Snorr.....	3,363	16	12,807	\$53	0	0	1	1/1	1-2	121	87
Indianapolis City Hospital *.....	Indianapolis.....	C. J. Clark.....	2,167	95	35,915	\$41	2	0	3	7/1	1-3	397	242
Indiana University Medical Center *1.....	Indianapolis.....	J. O. Ritchey.....	1,047	80	4,712	\$33	1	3	0	7/1	1-3	68	53
University Hospitals *1.....	Iowa City.....	F. M. Smith.....	2,120	87	3,028	\$21	1	4	0	7/1	1-6	109	67
University of Kansas Hospitals *.....	Kansas City, Kan.....	R. H. Major.....	1,287	56	14,919	\$50	1	2	0	7/1	1-3	103	64
Louisville City Hospital *.....	Louisville.....	J. W. Moore.....	1,728	98	34,156	\$14	8	0	0	7/1	1-3	293	152
Charity Hospital *.....	New Orleans.....	...	10,571	100	70,459	\$25	1	19	0	7/1	1-4	1,275	495
Touro Infirmary *1.....	New Orleans.....	C. Eshelman.....	1,362	35	24,247	\$25	2	0	0	7/1	1	112	53
Baltimore City Hospitals *.....	Baltimore.....	J. T. King.....	2,490	92	.....	\$12	1	6	0	7/1	1	453	172
Church Home and Infirmary *.....	Baltimore.....	Z. R. Morgan.....	489	22	.....	\$25	1	0	0	7/1	1	68	26
Hospital for Women *1.....	Baltimore.....	W. Baetjer.....	315	18	1,640	\$40	1	1	0	7/1	1	23	4
Johns Hopkins Hospital *.....	Baltimore.....	W. T. Longcope and H. M. Thomas, Jr.....	3,919	45	156,965	None	1	6	0	7/1&9/1	1-7	242	171
Maryland General Hospital *.....	Baltimore.....	E. B. Freeman.....	663	33	1,173	\$25	2	0	0	7/1	1-4	90	16
Mersey Hospital *.....	Baltimore.....	M. C. Pincoffs.....	900	35	3,263	\$25	1	3	0	7/1	2	113	40
Provident Hospital and Free Dispensary *.....	Baltimore.....	T. P. Sprunt.....	298	72	329	\$25	1	1	0	10/15	1-2	61	12

9. MEDICINE—(Continued)

	Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Visits	Beginning Salary	Residents	Assistant Residents	Fellow- ships	Service Begin	Length of Service (Years)	Deaths	Autopsies
St. Agnes' Hospital *	Baltimore..... J. T. O'Mara.....	906	31	3,241	None	1	0	0	7/1	1	114	15
St. Joseph's Hospital *	Baltimore..... C. Smink.....	893	40	3,792	\$10	1	2	0	7/1	3-4	182	45
Sinai Hospital *	Baltimore..... C. R. Austrian.....	1,273	84	12,220	\$50	1	2	0	7/1	1	147	52
South Baltimore General Hospital *	Baltimore..... G. McLean.....	342	41	659	\$25	1	1	0	7/1	1-2	51	17
Union Memorial Hospital *	Baltimore..... W. Baetjer.....	1,351	15	4,424	\$40	1	4	0	7/1	1-4	116	42
University Hospital *	Baltimore..... M. C. Pincoffs.....	1,397	50	18,223	\$25	1	3	1	7/1	1-4	161	63
West Baltimore General Hospital *	Baltimore..... L. A. M. Krause.....	646	80	1,649	\$20	2	0	0	7/1	2	90	23
Beth Israel Hospital *	Boston..... H. Linenthal.....	1,787	21	837	\$79	1	0	0	7/1	1-2	120	65
Boston City Hospital *	Boston..... G. R. Minot.....	11,311	89	152,701	None	6	8	10	Varies	1+	1,668	509
Joseph H. Pratt Diagnostic Hospital.....	Boston..... J. H. Pratt.....	1,735	12	.....	\$42	2	2	0	7/1&9/1	1-2	17	8
Lahey Clinic.....	Boston..... L. M. Hurkthal and F. N. Allan.....	3,000	..	10,000	\$100	0	0	10	1/1&7/1	1-2	75	40
Massachusetts General Hospital * ¹	Boston..... J. H. Means.....	4,043	48	72,991	\$42	1	5	0	9/1	1-3	176	83
Massachusetts Memorial Hospitals, Robert Dawson Evans Department of Clinical Research and Preventive Medicine.....	Boston..... C. S. Keefer.....	985	31	1,505	\$91	1	3	0	8/1	3	72	45
Peter Bent Brigham Hospital *	Boston..... S. Wells.....	2,229	94	21,016	\$41	1	6	0	Varies	1+	239	155
Worcester City Hospital *	Worcester, Mass..... R. W. Schofield.....	4,936	63	.....	\$75	1	0	0	7/1	1-2	383	159
University Hospital * ¹	Ann Arbor, Mich..... C. C. Sturgis.....	5,278	74	78,805	\$25	7	8	0	7/1	1-3	194	133
Alexander Blain Hospital.....	Detroit..... R. L. Fisher.....	324	..	.....	\$75	1	0	0	7/1	1-2	25	9
City of Detroit Receiving Hospital * ¹⁰	Detroit..... G. B. Myers.....	3,831	100	13,090	\$50	1	6	1	7/1	1-3	674	363
Grace Hospital *	Detroit..... G. B. Hoops.....	2,785	31	11,005	\$50	1	1	0	7/1	2	402	121
Harper Hospital *	Detroit..... H. Freund.....	2,454	12	24,678	\$45	1	6	0	7/1	3	102	45
Henry Ford Hospital *	Detroit..... R. H. Durham.....	1,189	28	10,940	\$130	8	13	0	9/1	1-5	34	16
Providence Hospital *	Detroit.....	1,865	10	.....	\$100	1	0	0	7/1	1	285	89
Woman's Hospital * ¹	Detroit..... B. I. Johnstone.....	485	9	701	\$100	1	1	0	7/1	1-2	48	18
Eloise Hospital and Infirmary *	Eloise, Mich..... M. R. McQuiggen.....	2,691	99	5,215	\$50	1	4	0	7/1	1-4	386	143
Hurley Hospital *	Flint, Mich..... M. S. Chambers.....	1,610	25	.....	\$42	1	0	0	7/1	1	237	79
Minneapolis General Hospital *	Flint, Mich..... G. Fahr.....	2,635	86	11,763	\$25	0	5	0	1/1&7/1	3	356	167
University Hospitals * ¹.....	..	1,134	75	36,356	\$50	1	0	4	1/1&7/1	3	131	91
Mayo Foundation.....	..	(See page 784)										
Ancker Hospital *	St. Paul..... A. R. Hall and A. Hoff.....	1,755	98	30,483	\$50	6	0	0	7/1	1	280	203
St. Louis County Hospital *	Clayton, Mo..... H. S. Liggett.....	1,693	98	20,450	\$50	1	1	0	7/1	1-2	187	80
Kansas City General Hospital *	Kansas City, Mo..... A. B. Jones.....	2,626	100	17,082	\$50	2	0	0	7/1	1-2	350	257
Barnes Hospital *	St. Louis..... D. P. Barr.....	3,879	9	26,578	\$25	1	3	0	7/1	1-3	127	77
De Paul Hospital *	St. Louis..... E. P. Buddy.....	1,437	24	1,158	\$50	1	1	0	7/1	1-2	184	52
Homer G. Phillips Hospital *	St. Louis..... L. Gottlieb.....	1,970	100	31,192	\$75	1	2	0	7/1	1-3	471	123
Jewish Hospital *	St. Louis..... L. Sule.....	2,266	24	9,889	\$35	1	2	0	7/1	1-5	152	34
St. Louis City Hospital *	St. Louis..... D. Sexton.....	4,007	100	16,945	\$50	3	6	0	7/1	1-2	697	323
St. Luke's Hospital *	St. Louis..... W. Baumgarten.....	885	19	7,334	\$50	0	1	0	7/1	1	78	37
St. Mary's Group of Hospitals *	St. Louis..... R. A. Kinsella.....	2,559	39	47,537	\$25	0	5	7	7/1	3	217	112
Creighton Memorial St. Joseph's Hosp. *	Omaha..... A. Sachs.....	2,711	10	9,408	\$50	1	0	0	7/1	1+	179	63
Jersey City Hospital *	Jersey City, N. J.....	4,614	90	34,027	\$75	1	1	0	7/1	1-2	779	95
Albany Hospital *	Albany, N. Y..... L. W. Gorham.....	1,471	3	6,190	\$25	1	2	0	7/1	1	101	63
Coney Island Hospital *	Brooklyn..... P. I. Nash.....	1,594	100	31,674	\$100	1	0	0	7/1	1	305	69
Cumberland Hospital *	Brooklyn..... H. Joachim.....	1,073	100	52,784	\$100	1	1	0	1/1	1	144	79
Jewish Hospital * ¹	Brooklyn..... S. R. Blatteis.....	2,000	31	22,189	\$25	1	1	0	1/1&7/1	1	219	74
Kings County Hospital *	Brooklyn..... J. Crawford and H. M. Moses.....	16,639	100	61,233	\$15	4	4	0	1/1&7/1	1-2	3,014	489
Long Island College Hospital * ¹	Brooklyn..... T. Howard.....	1,468	44	19,933	\$22	1	2	1	7/1	3-4	154	59
Norwegian Lutheran Deaconesses' Home and Hospital * ¹	Brooklyn..... B. A. Fedde and H. Gissel.....	615	1	374	None	1	0	0	7/1	2	83	33
Buffalo General Hospital *	Buffalo..... A. H. Aaron.....	2,483	9	.....	\$25	1	6	0	7/1	1	311	129
Edward J. Meyer Memorial Hospital (Buffalo City Hospital) *	Buffalo..... D. K. Miller.....	2,435	85	28,900	\$59	1	1	1	7/1	3-4	322	93
Millard Fillmore Hospital *	Buffalo..... J. Mesmer.....	1,007	19	2,523	\$25	1	0	0	7/1	1	106	21
Mary Imogene Bassett Hospital *	Cooperstown, N. Y..... G. M. Mackenzie.....	716	5	.....	\$100	1	0	0	7/1	1-2	75	49
Meadowbrook Hospital *	Hempstead, N. Y..... E. C. Jessup.....	2,347	90	.....	\$75	1	0	0	7/1	1	250	121
Queens General Hospital * ¹	Jamaica, N. Y..... A. W. Victor.....	2,067	100	36,005	\$15	1	1	0	7/1	1	339	183
Charles S. Wilson Memorial Hospital *	Johnson City, N. Y..... E. M. Jones.....	1,477	1	.....	\$75	1	0	0	7/1	1	134	62
Bellevue Hospital * ¹	New York City.....	11,021	100	.....	Varies	5	0	0	1/1&7/1	1	...	...
Flower-Fifth Avenue Hospital *	New York City..... L. J. Boyd.....	904	5	14,489	\$50	1	0	0	7/1	1	89	23
Metropolitan Hospital * ¹	New York City..... L. J. Boyd.....	4,214	..	64,875	\$100	2	0	0	7/1	1+	616	130
Montefiore Hosp. for Chronic Diseases * ¹	New York City..... L. Lichtwitz.....	568	87	.....	\$25	1	3	0	1/1&7/1	1	112	61
Mount Sinai Hospital * ^{1,10,23}	New York City.....	.....	55	.....	\$125	1	1	1	1/1&7/1	1	...	...
New York City Hospital *	New York City..... W. I. Reardon and B. F. Donaldson.....	2,932	100	33,269	\$15	2	0	0	7/1	1	428	149
New York Hospital * ¹	New York City..... E. F. DuBois.....	1,515	5	4,836	\$25	1	8	0	7/1	1-5	114	86
New York Infirmary for Women and Children * ²	New York City..... M. Manter.....	595	35	20,720	\$45	1	0	0	7/1	1	22	10
New York Polyclinic Medical School and Hospital *	New York City.....	883	12	8,139	None	1	0	0	7/1	2	63	15
New York Post-Graduate Medical School and Hospital *	New York City..... W. G. Lough.....	1,736	16	53,413	\$90	1	0	0	7/1	1	94	40
Presbyterian Hospital * ¹	New York City..... W. W. Palmer.....	4,053	31	62,379	\$42	1	3	0	7/1	1-2	213	105
Welfare Hospital for Chronic Diseases *	New York City.....	795	100	.....	\$50	7	14	0	7/1	1-2	102	41
Genesee Hospital *	Rochester, N. Y..... D. B. Jewett.....	1,473	..	5,197	\$75	1	2	0	7/1	1	145	54
Rochester General Hospital *	Rochester, N. Y..... D. A. Haller.....	561	10	5,432	\$50	1	1	0	7/1	1	83	71
Strong Memorial and Rochester Municipal Hospitals * ¹	Rochester, N. Y..... W. S. McCann.....	3,470	62	29,157	\$42	3	5	0	7/1	1-4	307	201
Hospital of the Good Shepherd *	Syracuse..... E. C. Reifstein.....	1,829	2	.....	\$83	1	1	0	7/1	1	140	65
Grasslands Hospital *	Valhalla, N. Y..... M. D. Touart.....	932	91	6,471	\$75	1	1	0	7/1	1-2	206	143
Duke Hospital * ¹	Durham, N. C..... F. M. Hanes.....	4,073	63	29,117	\$42	1	6	0	7/1	3-4	126	60
Watts Hospital *	Durham, N. C..... W. R. Stanford.....	1,349	24	4,299	\$25	0	1	0	7/1	1+	81	20
City Hospital *	Winston-Salem, N. C.....	1,823	33	9,671	\$50	2	0	0	7/1	1-2	201	50
Trinity Hospital *	Minot, N. D..... P. H. Rowe.....	761	10	.....	..	1	0	0	7/1	3	69	50
City Hospital *	Akron, O.....	1,767	23	7,440	\$50	1	0	0	7/1	1	213	101
Mercy Hospital *	Canton, O..... J. D. O'Brien.....	1,740	19	.....	\$65	1	0	0	7/1	1	185	63
Christ Hospital *	Cincinnati..... J. L. Tuechter.....	1,825	13	2,908	\$75	2	0	0	6/25	1	152	29
Cincinnati General Hospital * ¹	Cincinnati..... M. A. Blankenhorn.....	2,597	87	17,121	..	13	1	9	7/1	1-3	553	227
Deaconess Hospital *	Cincinnati..... F. C. Theiss.....	2,361	6	.....	\$75	1	0	0	7/1	1	161	22
Good Samaritan Hospital *	Cincinnati..... W. F. Freyhof.....	3,930	5	.....	\$35	2	0	0	7/1	1	223	67

9. MEDICINE—(Continued)

	Chief of Service	Inpatients Treated*	Per Cent Free*	Outpatient Visits	Beginning Salary	Residents	Assistant Residents	Fellow- ships	Service Begins	Length of Service (Years)	Deaths*	Autopsies
Jewish Hospital *1,15	Cincinnati..... W. Stix	3,596	17	.....	\$45	2	0	0	7/1	1-2	163	69
City Hospital *	Cleveland..... R. W. Scott.....	2,323	92	15,997	\$42	1	4	0	7/1	1	540	209
Cleveland Clinic Foundation Hospital..	Cleveland..... R. L. Haden.....	2,124	..	61,679	\$56	0	0	16	7/1	1-4	48	19
Mount Sinai Hospital *1	Cleveland..... S. S. Berger.....	2,022	13	21,738	\$50	1	0	0	7/1	1	170	41
St. Alexis Hospital *	Cleveland..... H. V. Paryzek.....	1,588	35	12,497	\$60	1	0	0	7/1	1	193	70
St. John's Hospital *	Cleveland..... R. K. Updegraff.....	1,465	17	.....	\$50	1	0	0	7/1	1-2	140	41
St. Luke's Hospital *	Cleveland..... C. T. Way.....	3,003	17	35,202	\$25	1	2	0	6/25	2	195	69
St. Vincent Charity Hospital *	Cleveland..... F. C. Oldenburg.....	1,852	32	13,542	\$50	1	0	0	7/1	1	217	82
University Hospitals *1	Cleveland..... J. T. Wearn.....	3,023	28	32,081	\$25	1	8	7	7/1	2	282	176
Starling-Loving University Hospital *	Columbus, O..... C. A. Doan.....	1,441	59	23,426	\$25	1	2	0	7/1	1-4	151	83
Miami Valley Hospital *	Dayton, O..... W. B. Bryant.....	2,437	23	.....	\$75	1	0	0	7/1	1	...	...
Huron Road Hospital *1	East Cleveland, O..... A. B. Schneider.....	1,182	9	4,765	\$50	1	0	0	7/1	1-2	99	39
Lucas County General Hospital *	Toledo, O..... C. S. Mundy.....	1,730	100	40,242	\$50	1	0	0	7/1	1	253	72
St. Elizabeth's Hospital *	Youngstown, O..... A. M. Rosenblum.....	2,011	8	.....	\$75	1	0	0	7/1	1	227	52
Youngstown Hospital *	Youngstown, O..... W. H. Bunn.....	2,037	20	1,103	\$50	1	0	0	7/1	1	211	39
St. Anthony Hospital *	Oklahoma City..... P. M. McNeill.....	1,907	8	.....	\$50	1	0	0	7/1	1	167	23
State University and Crippled Children's Hospitals *	Oklahoma City..... G. LaMotte	957	95	18,880	\$50	1	0	0	7/1	1	95	49
University of Oregon Medical School Hospitals and Clinics *1	Portland, Ore..... L. Selling	1,617	100	43,879	\$30	1	2	0	7/1	3	362	199
Abington Memorial Hospital *	Abington, Pa..... G. M. Piersol.....	1,294	13	1,762	\$25	1	0	0	7/1	1-4	140	56
George F. Geisinger Memorial Hosp.*1,18	Danville, Pa..... W. J. Stainsby.....	1,636	41	4,313	\$50	1	0	0	9/1	1	126	62
Germantown Dispensary and Hospital *	Philadelphia.....	1,387	24	36,936	\$110	1	0	0	7/1	1-2	113	46
Graduate Hospital of the University of Pennsylvania *	Philadelphia..... G. M. Piersol.....	1,149	61	27,014	None	1	0	0	7/1	1	105	46
Hahnemann Hospital *	Philadelphia..... G. H. Wells.....	1,411	52	13,681	\$50	1	0	0	9/1	2	232	90
Hospital of the University of Pennsylv- ania *1	Philadelphia..... O. H. P. Pepper.....	1,872	27	23,896	None	1	0	9m	9/1	1	107	77
Jefferson Medical College Hospital *	Philadelphia..... H. A. Reimann.....	2,573	77	20,649	\$50	1	0	0	9/1	1-3	246	114
Jewish Hospital *1	Philadelphia.....	1,521	27	5,793	None	1	0	0	6/15	1	183	101
Pennsylvania Hospital *	Philadelphia..... G. G. Duncan and D. L. Farley	1,471	26	10,099	\$20	0	0	2	7/1&9/1	1-3	184	101
Temple University Hospital *	Philadelphia..... C. L. Brown.....	994	43	20,626	\$40	3	0	0	7/1	3	72	34
Woman's Hospital *2	Philadelphia.....	415	46	2,330	\$25	1	0	0	9/1	1	20	9
Allegheny General Hospital *	Pittsburgh..... E. W. Willets.....	1,478	51	27,986	\$85	1	0	0	9/1	1	241	79
Elizabeth Steel Magee Hospital.....	Pittsburgh..... J. D. Heard.....	1,158	40	810	\$33	1	1	0	9/1	1-2	74	32
Mercy Hospital *	Pittsburgh..... W. W. G. MacLachlan.....	1,940	30	1,292	\$100	1	0	2	9/1	1-4	157	49
St. Francis Hospital *	Pittsburgh..... T. G. Simonton.....	1,429	30	2,281	\$65	2	0	0	9/1	3	207	37
Reading Hospital *1,18	Reading, Pa..... W. S. Bertolet.....	745	49	1,361	\$33	1	0	0	7/1	1	166	100
Robert Packer Hospital *	Sayre, Pa..... S. D. Conklin.....	2,040	55	4,038	\$50	1	0	0	9/1	1	112	61
Roper Hospital *	Charleston, S. O..... R. Wilson.....	1,806	74	27,687	\$40	0	1	0	7/1	1	204	69
John Gaston Hospital *	Memphis, Tenn..... C. H. Sanford.....	2,764	95	21,553	\$32	1	1	0	7/1	1	85	85
George W. Hubbard Hospital of Me- harry Medical College *	Nashville, Tenn..... E. L. Turner.....	595	60	4,757	\$75	1	0	0	7/1	2	87	34
Nashville General Hospital *	Nashville, Tenn..... O. N. Bryan.....	1,432	90	16,312	\$25	1	2	0	7/1	1-2	202	88
Vanderbilt University Hospital *	Nashville, Tenn..... H. J. Morgan.....	1,955	..	46,293	\$35	1	4	5	7/1	1	118	73
Baylor University Hospital *	Dallas, Tex..... H. M. Winans.....	2,701	16	5,176	\$50	1	1	0	7/1	1	153	45
Parkland Hospital *1	Dallas, Tex..... W. G. Reddick.....	2,019	95	27,542	\$10	4	0	0	1/1&7/1	1	288	98
John Sealy Hospital *	Galveston, Tex..... C. T. Stone.....	1,109	73	13,680	\$50	1	1	0	7/1	1	136	85
Jefferson Davis Hospital *1	Houston, Tex..... G. M. Brandau.....	2,148	100	23,222	\$50	1	0	0	7/1	1-2	489	153
Mary Fletcher Hospital *	Burlington, Vt..... C. H. Beecher.....	805	25	.....	\$150	1	0	0	7/1	1	69	34
University of Virginia Hospital *	Charlottesville..... E. M. Landis.....	2,111	27	6,778	\$50	1	2	0	7/1	1	119	54
Norfolk General Hospital *	Norfolk, Va.....	2,328	28	3,087	\$50	1	0	0	7/1	1-2	154	51
Medical College of Virginia, Hospital Division *1	Richmond..... W. B. Porter.....	1,876	5	9,436	\$25	1	3	0	7/1	1	307	92
King County Hospital *1,18	Seattle..... C. E. Watts.....	1,975	100	52,259	\$125	1	0	0	7/1	1-2	450	186
State of Wisconsin General Hospital *1	Madison..... W. S. Middleton.....	2,680	84	18,511	\$25	3	8	0	7/1	3	128	83
Columbia Hospital *	Milwaukee..... J. J. Pink.....	746	1	.....	\$23	1	0	0	7/1	1	60	34
St. Joseph's Hospital *1	Milwaukee..... R. E. Fitzgerald.....	1,681	22	.....	\$40	1	0	0	7/1	1	235	23
Milwaukee County Hospital *1	Wauwatosa, Wis..... F. D. Murphy.....	5,495	93	54,701	\$50	4	6	0	7/1	1-3	658	240
Queen's Hospital *	Honolulu, T. H..... N. P. Larsen.....	3,182	..	.....	\$90	1	0	0	1/1	1	...	...

10. MENTAL DEFICIENCIES

Lapeer State Home and Training School	Lapeer, Mich..... E. W. A. McLeod.....	3,850	100	\$165	4	0	0	Varies	1	73	26
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11. MIXED *1

St. Vincent's Hospital	Birmingham, Ala..... U. J. W. Peters.....	4,143	6	\$75	4	0	0	7/1	1	119	26
St. Margaret's Hospital.....	Montgomery, Ala.....	4,822	7	1,541	\$75	2	0	0	Varies	1	193	29
St. Mary's Hospital and Sanatorium..	Tucson, Ariz..... W. P. Holbrook.....	3,599	6	.....	\$75	3	0	0	Varies	1	130	43
Leo N. Levi Memorial Hospital.....	Hot Springs National Park, Ark..... D. C. Lee.....	1,313	100	22,674	\$50	2	0	0	7/1	1	34	15
Paradise Valley Sanitarium and Hosp.	National City, Calif..... C. E. Nelson.....	1,582	..	11,142	\$100	2	0	0	7/1	1-3	50	21
St. Joseph's Hospital *1	San Francisco..... R. H. Parkinson.....	8,095	10	.....	\$50	1	4	0	7/1	1	207	57
St. Mary Hospital	Pueblo, Colo..... J. F. Snedec.....	2,648	25	881	\$17	1	0	0	7/1	1	145	36
Riverside Hospital	Jacksonville, Fla..... T. Z. Cason.....	1,123	10	8,104	\$50	1	0	0	7/1	1	25	9
Lafayette Home Hospital.....	Lafayette, Ind..... A. B. Coyner.....	2,889	..	.....	\$85	2	0	0	7/1	1	119	25
St. Elizabeth Hospital.....	Lafayette, Ind..... R. D. Bayley.....	4,718	15	533	\$60	5	0	0	7/1	1	234	43
St. Luke's Methodist Hospital.....	Cedar Rapids, Ia..... C. T. Hauser.....	4,009	21	.....	\$125	2	0	0	7/1	1	153	53
Bethany Hospital	Kansas City, Kan..... D. N. Medearis.....	2,924	10	656	\$40	2	0	0	7/1	1	156	66
Flint-Goodridge Hospital of Dillard Uni- versity *1	New Orleans.....	1,387	39	27,910	\$30	4	0	0	7/1	1	44	16
Long Island Hospital	Boston..... J. R. Cunningham.....	1,294	99	.....	\$100	1	10	0	7/1	1-4	242	113
Framingham Union Hospital.....	Framingham, Mass..... J. C. Merriam.....	3,160	33	.....	\$42	2	0	0	6/1&7/1	1	112	29
Malden Hospital	Malden, Mass.....	5,852	1	.....	\$30	2	1	0	7/1	1	224	87
St. Joseph's Mercy Hospital.....	Ann Arbor, Mich..... G. F. Muehlh.....	3,302	5	28,237	..	2	0	0	7/1	1	109	69
Charles Godwin Jennings Hospital.....	Detroit..... A. F. Jennings.....	1,331	..	.....	\$83	2	0	0	7/1	1	22	7
Parkside Hospital	Detroit..... D. W. McLean.....	1,021	..	255	\$25	3	0	0	7/1	1	57	17
Mercy Hospital	Muskegon, Mich..... G. L. Le Fevre.....	3,547	2	.....	..	2	0	0	7/1	1	160	19
St. Joseph Mercy Hospital.....	Pontiac, Mich..... F. Fitzpatrick.....	3,974	..	7,347	\$109	5	0	0	7/1	1	116	63
Eitel Hospital	Minneapolis..... A. C. Strachauer.....	5,243	6	.....	\$100	2	0	0	7/1	1-2	96	34
Lutheran Deaconess Home and Hospital	Minneapolis..... E. C. Andreasen.....	4,492	2	.....	\$100	1	0	0	8/1	1	159	31
Northern Pacific Beneficial Association Hospital.....	St. Paul..... A. W. Ide.....	2,647	..	15,156	\$50	2	0	0	Varies	1	91	23

11. MIXED ³¹—(Continued)

		Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Visits	Beginning Salary	Residents	Assistant Residents	Fellow- ships	Service Begin	Length of Service (Years)	Deaths	Autopsies
Christian Hospital	St. Louis	G. A. Mellies	1,715	10	425	\$50	2	0	0	7/1	1	72	14
Elliot Hospital	Manchester, N. H.	G. C. Wilkins	2,343	12	...	\$25	2	0	0	1/1&7/1	1	71	87
Auburn City Hospital	Auburn, N. Y.	W. Sefton	4,802	10	9,392	\$75	2	0	0	7/1	1	162	46
Jewish Sanitarium and Hospital for Chronic Diseases	Brooklyn	A. M. Rablner	174	40	...	\$25	1	2	0	7/1	1	131	41
St. Agnes Hospital	Raleigh, N. C.	H. A. Royster	1,524	75	3,475	...	1	0	0	7/1&9/1	1	106	27
Park View Hospital	Rocky Mount, N. C.	B. C. Willis	2,550	32	14,534	\$50	1	0	0	7/1	1	140	43
Glenville Hospital	Cleveland	J. B. Price	3,791	5	5,221	\$25	2	0	0	7/1	1	145	66
Grant Hospital	Columbus, O.	H. A. Baldwin	6,129	13	330 ^b	\$75	6	0	0	7/1	1	233	66
Mansfield General Hospital	Mansfield, O.	C. R. Damron	4,160	...	\$100	1	0	0	0	7/1	1	170	30
Morningside Hospital	Tulsa, Okla.	J. B. Gilbert	3,760	...	\$150	2	0	0	0	7/1	1	166	45
Medical Arts Hospital	Dallas, Tex.	R. E. Wright	4,370	2	...	\$100	2	0	0	7/1	1	57	4
St. Mary's Infirmary	Galveston, Tex.	G. M. Beeler	3,481	19	4,326	...	3	0	0	7/1	1	164	62
Methodist Hospital	Houston, Tex.	G. M. Dickson	3,686	2	1,241	\$50	4	0	0	7/1	1	116	30
Wichita Falls Clinic Hospital	Wichita Falls, Tex.	Q. B. Lee	3,060	25	...	\$50	3	0	0	7/1	1	51	13
Chesapeake and Ohio Railway Hospital	Clifton Forge, Va.	J. M. Emmett	3,263	55	5,862	\$50	3	0	0	1/1&7/1	2	105	30
Elizabeth Buxton Hospital	Newport News, Va.	R. von L. Buxton	3,203	10	11,784	\$75	2	0	0	7/1	1-2	83	35
Grace Hospital	Richmond, Va.	...	3,430	...	\$25	3	0	0	0	7/1	1	...	...
St. Elizabeth's Hospital	Richmond, Va.	J. S. Horsley	1,430	...	3,988	\$100	1	0	0	7/1	1	40	34
St. Luke's Hospital	Richmond, Va.	S. McGulre	2,306	...	9,826	\$75	3	0	0	7/1	1	57	5
McMillan Hospital	Charleston, W. Va.	H. L. Robertson	2,455	...	2,200	\$50	2	0	0	7/1	1-2	54	17
St. Francis Hospital	Charleston, W. Va.	R. Kessel	3,036	...	1,500	\$50	4	0	0	7/1	1-2	85	17
Mercy Hospital	Janesville, Wis.	R. W. Farnsworth	2,294	...	...	\$35	3	0	0	7/1	1	146	39

12. NEUROLOGY

Revision of list is now taking place in collaboration with the American Board of Psychiatry and Neurology

Los Angeles County Hospital	Los Angeles	S. Ingham	1,244	100	4,493	\$10	1	0	0	7/1	2	406	155
Gallinger Municipal Hospital	Washington, D. C.	J. W. Watts and W. Freeman	122	99	...	\$25	0	1	0	7/1	1	7	6
University of Chicago Clinics	Chicago	P. O. Bucy	...	36	2,935	\$20	2	1	2	7/1	3	22	19
University Hospitals	Iowa City	C. Van Epps	769	87	1,161	\$21	1	1	0	7/1	1-6	25	11
Boston City Hospital	Boston	H. H. Merritt	483	89	6,485	None	1	1	9	Varies	1+	16	8
Massachusetts General Hospital	Boston	J. B. Ayer	457	45	14,293	\$42	1	1	0	2/1&8/1	1	13	9
University Hospital	Ann Arbor, Mich.	C. Camp	800	74	7,236	\$25	1	1	0	7/1	1-4	32	20
Henry Ford Hospital	Detroit	G. O. Grain	218	28	1,975	\$130 ^c	1	0	0	9/1	3	8	2
Mayo Foundation	Rochester, Minn.	(See page 784)	...	...	...	...	...	...	...	...	...	...	...
Kings County Hospital	Brooklyn	O. C. Perkins	3,451	100	3,139	\$15	2	2	0	7/1	2	664	103
Bellevue Hospital	New York City	F. Kennedy	2,842	100	5,720	\$18	2	2	0	1/1&7/1	1	...	...
Lenox Hill Hospital	New York City	T. K. Davis	240	35	1,369	\$25	1	0	0	7/1	1	7	5
Metropolitan Hospital	New York City	S. P. Jewett	249	...	1,502	\$75	1	0	0	7/1	1+	54	3
Montefiore Hosp. for Chronic Diseases	New York City	S. P. Goodhart	275	87	...	\$25	1	4	0	1/1&7/1	1½	26	21
Mount Sinai Hospital	New York City	...	...	55	...	\$50	1	2	2	1/1&7/1	1½	...	...
Neurological Institute of New York	New York City	T. J. Putnam	3,208	12	25,415	\$40	1	13	0	Quart.	1-3	127	62
New York City Hospital	New York City	J. H. Nolan	594	100	1,320	\$100	1	0	0	7/1	1	151	61
Welfare Hospital for Chronic Diseases	New York City	M. Neustaedter	190	100	...	\$100	2	0	0	Varies	1	64	19
Duke Hospital	Durham, N. C.	R. W. Graves	420	63	552	\$42	1	0	0	7/1	1-2	34	22
Jefferson Medical College Hospital	Philadelphia	B. J. Alpers	634	77	4,177	None	1	0	0	Varies	1-3	19	8
Philadelphia Orthopaedic Hospital and Infirmary for Nervous Diseases	Philadelphia	F. W. Sinkler and F. H. Leavitt	222	74	3,220	\$40	1	0	0	7/1	1	4	0
Temple University Hospital	Philadelphia	T. Fay	592	43	4,233	\$40	3	0	0	7/1	3	60	41

13. NEUROSURGERY

Los Angeles County Hospital	Los Angeles	C. W. Rand	1,605	100	490	\$10	2	0	0	7/1	3	193	4
University of California Hospital	San Francisco	H. C. Naffziger	464	58	...	...	0	1	0	7/1	1	24	13
Fresbyterian Hospital	Chicago	A. Verbrugghen	98	13	...	None	1	0	0	1/1	1-2	10	7
Research and Educational Hospital	Chicago	E. Oldberg	316	100	...	\$50	1	0	0	7/1&9/1	1+	23	31
Johns Hopkins Hospital	Baltimore	W. L. Dandy	64	45	...	None	1	0	0	7/1&9/1	1-2	62	34
Boston City Hospital	Boston	D. Munro	352	89	...	None	1	1	0	Varies	1+	73	16
Lahey Clinic	Boston	G. Horrax	600	...	...	\$100 ^c	0	4	1	1/1,7/1&9/1	1-2	25	18
Massachusetts General Hospital	Boston	W. J. Mixer	329	48	...	\$42	1	0	0	1/1&7/1	1	35	19
Henry Ford Hospital	Detroit	A. S. Crawford	253	28	729	\$130 ^c	1	0	0	9/1	2-3	14	12
Mayo Foundation	Rochester, Minn.	(See page 784)	...	...	...	...	...	...	...	...	...	...	...
Barnes Hospital	St. Louis	E. Sachs	377	3	...	\$25	0	1	0	7/1	1	24	23
Albany Hospital	Albany, N. Y.	E. H. Campbell	299	31	507	\$25	1	1	1	1/1	2	37	22
Jewish Hospital	Brooklyn	L. M. Davidoff	...	100	1,849	\$15	1	1	0	7/1	1-2	216	149
Kings County Hospital	Brooklyn	E. J. Browder	...	12	...	\$40	1	2	0	Varies	3	...	...
Neurological Institute of New York	New York City	B. P. Stookey	...	...	...	...	...	...	...	...	...	...	...
Strong Memorial and Rochester Municipal Hospitals	Rochester, N. Y.	W. P. Van Wagenen	312	62	204	\$87	1	0	0	7/1	1-2	...	...
Cleveland Clinic Foundation Hospital	Cleveland	W. J. Gardner	533	...	2,331	\$56	0	0	2	7/1	1-3	42	30
Hospital of the University of Pennsylv- ania	Philadelphia	F. C. Grant	414	27	173	None	1	0	0	7/1	1-3	50	30
Temple University Hospital	Philadelphia	(See Neurology)	...	...	...	...	...	...	...	...	...	...	...
Medical College of Virginia, Hospital Division	Richmond	C. O. Coleman	1,141	5	466	\$25	1	1	0	7/1	1	79	24

14. OBSTETRICS

Revision of list is now taking place in collaboration with the American Board of Obstetrics and Gynecology

Hospital for Children	San Francisco	H. A. Stephenson	1,216	4	2,804	\$25	0	1	0	7/1	1	2	0
Garfield Memorial Hospital	Washington, D. C.	A. Y. P. Garnett	1,833	...	1,212	\$50	1	1	0	7/1	1-2	...	...
Sibley Memorial Hospital	Washington, D. C.	H. F. Kane	2,140	6	...	\$65	1	0	0	7/1	1	4	1
Chicago Maternity Center	Chicago	B. E. Tucker	...	100	15,817	None	1	0	0	1/1	1	...	...
Cook County Hospital	Chicago	D. S. Hillis	7,745	100	15,440	\$25	4	0	0	1/1&7/1	1	...	...
Grant Hospital	Chicago	...	1,062	5	...	\$50	1	0	0	7/1	1-3	...	...
Provident Hospital	Chicago	P. M. Santos	708	62	4,221	\$40	1	0	0	9/1	1-3	...	...
Ravenswood Hospital	Chicago	M. Field	875	3	...	\$75	1	0	0	1/1	1	1	0
Research and Educational Hospital	Chicago	F. Falls	734	100	9,463	\$50	3	0	0	7/1&9/1	1-3	...	...
St. Vincent's Infant and Maternity Hos- pital	Chicago	H. E. Schmitz	271	100	1,503	\$50	1	0	0	7/1	1	...	...
Indiana University Medical Center	Indianapolis	H. F. Beckman	1,366	80	5,655	\$33	1	0	0	7/1	1-2	...	...
Touro Infirmary	New Orleans	W. E. Levy	1,317	25	10,833	\$25	2	0	0	7/1	1	3	1
Baltimore City Hospitals	Baltimore	L. H. Douglass	2,533	92	...	\$12	1	2	0	7/1	1	7	6
Johns Hopkins Hospital	Baltimore	N. J. Eastman	3,590	45	15,550	None	1	4	0	7/1&9/1	1-5	...	...
Provident Hosp. and Free Dispensary	Baltimore	L. H. Douglass	323	72	512	\$25	1	0	0	10/15	1	...	...

14. OBSTETRICS—(Continued)

		Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Visits	Beginning Salary	Residents	Assistant Residents	Fellow- ships	Service Beginns	Length of Service (Years)	Deaths	Autopsies
Sinai Hospital *	Baltimore	M. W. Aaronson	824	34	2,757	\$50	0	1	0	7/1	1	3	1
Union Memorial Hospital *	Baltimore	J. McF. Bergland	632	15	1,704	\$30	1	0	0	7/1	1-2	12	6
University Hospital * ¹	Baltimore	L. H. Douglass	1,896	50	11,654	\$25	1	3	0	7/1	1-4	5	1
Boston Lying-in Hospital	Boston	F. C. Irving	3,189	9	30,313	\$50	1	2	0	1/1&7/1	1½	0	0
Massachusetts Memorial Hospitals *	Boston	C. W. Sewall	819	31	4,358	\$95	2	0	0	7/1	1	1	0
Providence Hospital *	Detroit		2,493	10		\$100	1	0	0	7/1	1	8	2
Cooper Hospital *	Camden, N. J.	A. B. Davis and G. B. German	1,711	40	6,975	\$100	1	0	0	7/1	3	4	2
Margaret Hague Maternity Hospital ¹	Jersey City, N. J.	S. A. Cosgrove	6,387	80	46,756	\$100	7	0	0	Quart.	1½	15	4
Anthony N. Brady Maternity Home	Albany, N. Y.	G. E. Lochner	1,269	5	2,666	\$100	1	0	0	7/1	1-3	1	0
Cumberland Hospital *	Brooklyn	W. C. Meagher	1,170	100	9,440	\$100	1	1	0	1/1	1	5	2
Methodist Hospital *	Brooklyn	O. P. Humpstone	1,917	30	9,712	\$90	1	1	0	1/1&7/1	1	7	3
Norwegian Lutheran Deaconesses' Home and Hospital * ¹	Brooklyn	J. B. Dowd and B. Harris	863	1	3,532	None	1	1	0	7/1	2	2	0
Buffalo General Hospital *	Buffalo	F. C. Goldsborough	783	9		\$25	0	1	0	7/1	1	4	0
Millard Fillmore Hospital *	Buffalo	M. G. Potter	1,533	19	1,191	\$25	1	0	0	7/1	1	6	1
Fordham Hospital *	New York City	A. C. Butts	1,664	100	7,111	\$15	1	0	0	1/1	1	6	3
French Hospital *	New York City	F. C. Holden	1,204	7	7,375	\$83	1	0	0	7/1	1	4	2
Harlem Hospital * ¹	New York City	F. A. Kassebohm	3,130	100	18,982	\$15	1	0	0	7/1	1	14	2
Lenox Hill Hospital *	New York City	P. H. Williams and R. L. McCready	1,162	35	4,244	\$50	1	0	0	7/1	1	3	2
Morrisania City Hospital * ²⁰	New York City	H. Aranow	1,412	100	4,527	\$15	1	1	0	1/1&7/1	1	4	2
New York Infirmary for Women and Children * ²	New York City	W. Ragland	973	35	5,652	\$45	1	0	0	7/1	1	2	1
New York Polyclinic Medical School and Hospital *	New York City		907	12	2,703	None	1	0	0	7/1	2	...	...
Syracuse Memorial Hospital *	Syracuse, N. Y.	H. W. Schoeneck	1,425	30		None	1	0	0	7/1	1	3	1
Watts Hospital *	Durham, N. C.	R. A. Ross	718	24	1,011	\$25	1	0	0	7/1	1	1	0
Cincinnati General Hospital * ¹	Cincinnati	H. L. Woodward	2,844	87	3,310	*	1	2	0	7/1	2	4	4
City Hospital *	Cleveland	A. H. Bill	1,755	92	3,763	\$42	1	2	0	7/1	1	4	...
Mount Sinai Hospital * ¹	Cleveland	M. Garber	885	13	1,702	\$60	1	0	0	7/1	1	...	...
St. Ann's Maternity Hospital	Cleveland	J. R. Thompson	1,697	13	2,120	\$50	2	0	0	7/1	1	3	0
St. John's Hospital *	Cleveland	C. A. O'Connell	1,118	17		\$50	1	0	0	7/1	1-2	4	3
St. Luke's Hospital * ²⁰	Cleveland	C. T. Hemmings	3,152	17	2,002	\$25	1	1	0	6/25	2	2	0
University Hospitals *	Cleveland	A. H. Bill	2,611	23	23,321	\$25	1	4	0	7/1	2	3	1
Miami Valley Hospital *	Dayton, O.	G. Erbaugh	1,829	28		\$75	1	0	0	7/1	1	...	...
George F. Geisinger Memorial Hospital ¹	Danville, Pa.	R. E. Nicodemus	614	41	2,907	\$50	1	0	0	9/1	1	2	1
Jefferson Medical College Hospital *	Philadelphia	N. W. Vaux	1,671	77	11,209	\$50	2	0	0	7/1&10/1	1-3	4	2
Woman's Hospital * ²	Philadelphia		1,035	46	3,512	\$25	1	0	0	9/1	1-2	0	0
Elizabeth Steel Magee Hospital	Pittsburgh	C. E. Ziegler	3,653	40	14,978	\$42	1	3	0	9/1	1-5	19	9
St. Francis Hospital *	Pittsburgh	J. H. Carroll	1,313	30	1,588	\$65	1	0	0	9/1	3	2	1
Baroness Erlanger Hospital *	Chattanooga, Tenn.	H. P. Hewitt	1,559	57	3,908	\$75	1	0	0	7/1	1+	...	...
John Gaston Hospital *	Memphis, Tenn.	W. T. Pride	1,450	95	12,129	\$65	1	0	0	7/1	1	21	3
Baylor University Hospital *	Dallas, Tex.	C. R. Hannah	1,391	15	4,856	\$50	1	1	0	7/1	1	6	2
Parkland Hospital * ¹	Dallas, Tex.	W. T. Robinson	1,912	95	6,214	\$10	2	0	0	1/1&7/1	1	12	3
Medical College of Virginia, Hospital Division * ¹	Richmond	H. H. Ware	1,476	5	4,588	\$25	1	1	0	7/1	1	29	14

15. OBSTETRICS-GYNECOLOGY

Revision of list is now taking place in collaboration with the American Board of Obstetrics and Gynecology

Hillman Hospital *	Birmingham, Ala.		3,255	100	17,275	\$50	2	0	0	7/1	1	46	6
Los Angeles County Hospital * ¹	Los Angeles	E. M. Lazard	11,546	100	12,380	\$10	7	0	0	4/1&10/1	3½	54	25
White Memorial Hospital * ¹	Los Angeles	R. J. Thompson	1,671	3	14,317	\$80	2	0	0	7/1	1-3	8	4
Alameda County Hospital * ¹	Oakland, Calif.	E. N. Ewer and C. A. De Puy	2,175	92		\$40	1	1	0	7/1	1-3	17	6
San Francisco Hospital * ¹	San Francisco	W. G. Moore and A. V. Pettit	2,704	100		\$50	4	0	0	7/1	1	...	...
Stanford University Hospitals * ¹	San Francisco	L. Emge	1,509	2	14,262	\$25	1	2	0	7/1	1-2	10	4
University of California Hospital * ¹	San Francisco	F. W. Lynch	1,896	58	12,451	\$25	1	3	0	7/1	1+	8	7
Santa Clara County Hospital *	San Jose, Calif.	A. Shufelt	1,203	100	11,292	\$75	1	0	0	7/1	1	...	...
New Haven Hospital *	New Haven, Conn.	A. H. Morse	1,569	37	8,429	*	2	0	0	7/1	1+	4	2
Columbia Hospital for Women and Lying-in Asylum ¹	Washington, D. C.		3,497	..		None	4	2	0	1/1&7/1	1½	11	4
Freedmen's Hospital * ¹	Washington, D. C.	J. W. Ross	1,700	85	8,643	*	1	2	0	7/1&10/1	1-2	26	9
Gallinger Municipal Hospital *	Washington, D. C.	H. F. Kane	4,935	99	5,076	\$25	2	2	0	7/1	1	27	26
Grady Hospital *	Atlanta, Ga.		5,769	100	57,541	\$10	2	4	0	7/1	1+	39	18
University Hospital * ¹	Augusta, Ga.	R. Torpin	2,185	29	5,726	\$40	1	1	0	7/1	1	14	11
Chicago Lying-in Hosp. and Dispensary	Chicago	(See University of Chicago Clinics)											
Mercy Hospital-Loyola University Clinics * ¹	Chicago	H. Schmitz	1,151	26	5,503	\$50	2	0	0	7/1	3	25	18
Michael Reese Hospital * ¹	Chicago	I. Steln	3,063	43	6,192	\$50	2	0	0	1/1&7/1	3	17	11
Mount Sinai Hospital * ¹	Chicago	A. E. Kanter and L. Rudolph	1,480	35	3,196	\$30	1	0	0	7/1	1	2	2
Presbyterian Hospital *	Chicago	N. S. Heaney	1,934	13		\$30	3	0	0	1/1&7/1	2½	11	6
St. Luke's Hospital *	Chicago	H. O. Jones	1,827	7	9,233	\$25	3	0	0	7/1	1-3	15	9
University of Chicago Clinics * ^{1,6}	Chicago	F. L. Adair	3,951	36	33,153	None	3	4	0	1/1&7/1	3	2	2
Indianapolis City Hospital *	Indianapolis	J. W. Hofmann and H. F. Beckman	2,952	95	19,079	\$11	2	0	0	7/1	1	38	20
University Hospitals * ¹	Iowa City	E. D. Plass	3,055	87	3,240	\$21	1	3	0	7/1	1-6	22	12
University of Kansas Hospitals *	Kansas City, Kan.	L. A. Calkins	1,016	56	7,122	\$50	1	2	0	7/1	1-3	15	10
Louisville City Hospital *	Louisville, Ky.	C. W. Hibbitt	2,504	93	18,527	\$14	2	3	0	7/1	1-3	20	11
Charity Hospital *	New Orleans		12,801	100	40,600	\$25	7	7	0	7/1	1-3	131	61
Maryland General Hospital *	Baltimore	E. H. Kloman	803	33	1,464	\$25	1	0	0	7/1	1-4	10	3
Mercy Hospital *	Baltimore	A. Samuels and E. P. Smith	1,195	33	2,749	\$25	1	1	0	7/1	3	16	7
St. Joseph's Hospital *	Baltimore	T. Galvin	1,537	40	2,600	\$10	1	1	0	7/1	3-4	3	1
Boston City Hospital * ¹	Boston	R. M. Green	5,836	89	20,225	None	2	0	0	Varies	1+	10	5
Carney Hospital *	Boston		8-9	6	4,198	None	1	2	0	1/1,5/1&9/1	1	10	2
University Hospital * ¹	Ann Arbor, Mich.	N. F. Miller	3,052	74	16,000	\$25	2	2	0	7/1	1-4	60	37
City of Detroit Receiving Hospital * ^{10,11}	Detroit	W. F. Seeley	1,219	100	5,229	\$33	2	2	0	7/1	1-4	27	19
Florence Crittenton Hospital	Detroit	H. A. Pearce	2,765		8,205	\$50	1	2	0	7/1	3	9	3
Grace Hospital * ¹	Detroit	M. A. Darling	3,773	31	4,121	\$50	1	2	0	9/1	3	5	1
Harper Hospital *	Detroit	G. Kamperman	2,402	12	5,552	\$15	1	2	0	7/1	3	8	1
Henry Ford Hospital *	Detroit	J. P. Pratt	1,590	28	17,761	\$120	1	2	0	9/1	4	12	6

15. OBSTETRICS-GYNECOLOGY—(Continued)

		Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Visits	Beginning Salary	Residents	Assistant Residents	Fellow- ships	Services Begin	Length of Service (Years)	Deaths	Autopsies
Herman Kiefer Hospital.....	Detroit.....	W. F. Seeley.....	2,335	98	.....	\$125	2	0	0	7/1	1	13	6
Woman's Hospital ¹	Detroit.....	H. M. Nelson and L. E. Daniels.....	3,981	9	2,823	\$75	2	7	1	7/1	1-3	22	9
Minneapolis General Hospital ¹	Minneapolis.....	J. H. Simons.....	2,391	86	10,433	\$25	0	0	2	1/1&7/1	3	17	12
University Hospitals ¹	Minneapolis.....	J. L. McKelvey.....	1,292	75	7,591	\$50	1	0	3	1/1&7/1	3	8	6
Mayo Foundation.....	Rochester, Minn.....	(See page 784)											
Ancker Hospital ¹	St. Paul.....	L. W. Barry.....	1,930	98	10,866	\$50	0	0	1	7/1	3	21	13
Jewish Hospital ¹	St. Louis.....	S. A. Weintraub.....	1,200	24	1,681	\$63	1	0	0	7/1	1-5	7	3
St. Louis City Hospital ¹	St. Louis.....	T. K. Brown and T. Y. Ayars.....	3,690	100	8,151	\$50	1	4	0	7/1	1-3	31	21
St. Louis Maternity Hospital ¹	St. Louis.....		2,220	9	.....	\$25	1	1	0	7/1	1-3	4	4
St. Luke's Hospital ¹	St. Louis.....	C. D. O'Keefe.....	1,087	19	1,169	\$50	0	1	0	7/1	1	...	...
St. Mary's Group of Hospitals ¹	St. Louis.....	W. H. Vogt.....	2,448	39	14,462	\$25	0	0	6	7/1	3	12	6
Creighton Memorial St. Joseph's Hosp. ¹	Omaha.....	M. E. Grier.....	1,558	10	4,058	\$50	1	0	0	7/1	1-3	8	3
University of Nebraska Hospital ¹	Omaha.....	E. C. Sage.....	878	100	3,952	\$50	1	0	0	7/1	1	8	5
Greenpoint Hospital ¹	Brooklyn.....	T. S. Welton.....	1,699	100	10,300	None	0	2	9/1	2	7	3	
Jewish Hospital ¹	Brooklyn.....		4,269	31	7,907	\$25	2	2	0	1/1&7/1	2	10	3
Kings County Hospital ¹	Brooklyn.....	R. Garlick and C. Gor- don.....	7,629	100	26,504	\$15	4	0	0	7/1	2	66	16
Long Island College Hospital ¹	Brooklyn.....	A. C. Beck.....	2,309	44	13,252	\$22	1	2	0	7/1	3	12	4
St. Mary's Hospital ¹	Brooklyn.....		1,699	22	5,431	\$40	1	1	0	7/1	1-2	9	3
Edward J. Meyer Memorial Hospital (Buffalo City Hospital) ¹	Buffalo.....	F. Goldsborough.....	1,360	85	3,900	\$59	1	2	1	7/1	3-4	20	7
Queens General Hospital ¹	Jamaica, N. Y.....	H. P. Mencken.....	2,905	100	13,609	\$15	1	1	0	7/1	1	8	6
Bellevue Hospital ¹	New York City.....	W. E. Studdiford.....	4,356	100	.....	Varies 11*	0	0	0	7/1	4	...	...
Flower-Fifth Avenue Hospital ¹	New York City.....	H. B. Safford.....	2,310	5	4,264	\$50	1	0	0	7/1	1	8	0
Lincoln Hospital ¹	New York City.....	E. J. Davin.....	2,202	..	14,908	\$15	2	3	0	1/1&7/1	1-2	9	3
Lying-in Hospital.....	New York City.....	H. J. Stander.....	3,875	5	2,970	\$25	1	10	0	7/1	1-5	12	10
Metropolitan Hospital ¹	New York City.....	H. B. Safford.....	1,954	..	13,849	\$15	2	0	0	7/1	1+	13	1
New York City Hospital ¹	New York City.....	J. V. Ricci and R. W. Nutter.....	1,695	100	4,208	None	1	0	0	7/1	1	17	5
Sloane Hospital for Women ¹	New York City.....	B. P. Watson.....	4,499	31	35,699	\$50	1	2	0	7/1	3	15	5
Woman's Hospital ¹	New York City.....	A. H. Aldridge.....	3,963	36	40,392	\$10	11	0	0	Quart.	2-3	22	9
Strong Memorial and Rochester Muni- cipal Hospitals ¹	Rochester, N. Y.....	K. M. Wilson.....	2,534	62	13,914	\$42	1	2	2	7/1	1-4	11	6
Duke Hospital ¹	Durham, N. C.....	B. Carter.....	1,715	63	13,753	\$42	1	2	0	7/1	3-4	31	20
Mercy Hospital ¹	Canton, O.....	L. E. Leavenworth.....	1,909	19	.....	\$65	1	0	0	7/1	1	13	2
Huron Road Hospital ¹	East Cleveland, O.....	G. J. Salisbury and S. C. Runnels.....	1,978	9	1,324	\$40	1	0	0	7/1	1-3	11	8
Lucas County General Hospital ¹	Toledo.....	E. C. Mohr and M. W. Diethelm.....	1,072	100	2,419	\$50	1	0	0	7/1	1	11	4
State University and Crippled Children's Hospitals ¹	Oklahoma City.....	G. Penick and W. W. Wells.....	1,131	95	9,196	\$50	1	0	0	7/1	1	13	8
University of Oregon Medical School Hospitals and Clinics ¹	Portland.....	R. E. Watkins.....	1,656	100	12,738	\$30	1	2	0	7/1	3	8	6
Hahnemann Hospital ¹	Philadelphia.....	E. B. Craig and L. B. Clemmer.....	1,796	52	9,856	\$50	1	0	0	9/1	2	15	11
Hospital of the University of Pennsyl- vania ¹	Philadelphia.....	C. C. Norris.....	2,542	27	14,070	None	3	0	0	9/1	3	...	...
Kensington Hospital for Women.....	Philadelphia.....	E. A. Schumann.....	1,629	46	8,113	\$25	2	1	0	7/1	1-2	7	5
Pennsylvania Hospital ¹	Philadelphia.....	R. A. Kimbrough, Jr. and C. B. Lull.....	3,425	26	18,464	\$20	0	0	3	1/1, 5/1, 9/1	1-3	15	6
Philadelphia General Hospital ¹	Philadelphia.....		3,389	95	12,295	\$100	1	0	0	7/1	1-2	...	...
Roper Hospital ¹	Charleston, S. C.....	R. L. McCrady and L. A. Wilson.....	1,398	74	14,182	\$40	0	1	0	7/1	1-2	13	4
George W. Hubbard Hospital of Meharry Medical College ¹	Nashville, Tenn.....	R. S. Duke.....	251	60	1,197	\$75	1	0	0	7/1	1-2	11	3
Nashville General Hospital ¹	Nashville, Tenn.....	D. C. Seward and M. S. Lewis.....	1,714	90	15,090	\$25	1	1	0	7/1	1-2	8	4
Vanderbilt University Hospital ¹	Nashville, Tenn.....	L. E. Burch.....	1,375	..	12,460	\$35	1	3	5	7/1	1	14	8
John Sealy Hospital ¹	Galveston, Tex.....	W. R. Cooke.....	1,222	73	6,143	\$50	1	0	0	7/1	1	14	10
University of Virginia Hospital ¹	Charlottesville.....	T. J. Williams.....	1,212	27	4,519	\$50	1	1	0	7/1	1	20	6
State of Wisconsin General Hospital ¹	Madison.....	J. W. Harris.....	1,003	84	5,548	\$25	1	2	0	7/1	3	7	5
Milwaukee County Hospital ¹	Wauwatosa, Wis.....	H. W. Shutter.....	2,894	98	17,229	\$50	4	2	0	7/1	1	10	6

16. OPHTHALMOLOGY

Los Angeles County Hospital ¹	Los Angeles.....	W. A. Boyce and A. R. Irvine.....	615	100	15,057	\$10	2	0	0	7/1	2	5	1
White Memorial Hospital ¹	Los Angeles.....	W. A. Boyce.....	156	3	7,321	\$80	1	0	0	7/1	1-3	1	1
Green's Eye Hospital.....	San Francisco.....	A. S. Green.....	1,059	..	18,502	\$50	1	0	0	7/1	1	...	...
San Francisco Hospital ¹	San Francisco.....	W. D. Horner and S. F. Boyle.....	660	..	.....	\$50	1	0	0	7/1	1	...	...
Stanford University Hospitals ¹	San Francisco.....	H. Barkan.....	448	2	10,818	\$25	1	1	0	7/1	1-2	1	1
University of California Hospital ¹	San Francisco.....	H. C. Naffziger.....	201	58	15,559	\$25	0	2	0	7/1	1+	...	...
Colorado General Hospital ¹	Denver.....	W. M. Bane.....	114	57	11,285	\$40	2	0	0	7/1	2	...	...
Episcopal Eye, Ear and Throat Hospital	Washington, D. C.....		6,244	27	25,434	\$7	1	4	0	3/1, 7/1, 11/1	1 1/2	3	0
Cook County Hospital ¹	Chicago.....	W. F. Moncreiff.....	631	100	23,233	\$25	5	0	0	1/1&7/1	1-3	4	0
Illinois Eye and Ear Infirmary ¹	Chicago.....	H. S. Gradle.....	2,551	100	216,274	None	6	0	0	1/1&7/1	1	0	0
Michael Reese Hospital ¹	Chicago.....	S. J. Meyer.....	572	43	8,925	\$50	1	0	0	7/1	1	...	...
Passavant Memorial Hospital ¹	Chicago.....	S. R. Gifford.....	321	14	127	None	1	0	0	1/1&7/1	1	1	1
Presbyterian Hospital ¹	Chicago.....	W. F. Moncreiff.....	183	13	.....	\$25	1	1	0	1/1&7/1	1	...	...
Research and Educational Hospital ¹	Chicago.....	H. Beard.....	190	100	8,647	\$50	1	0	0	7/1&9/1	1	...	...
University of Chicago Clinics ¹	Chicago.....	E. V. L. Brown.....	220	36	9,847	\$25	1	3	3	7/1	1-3	2	0
Indianapolis City Hospital ¹	Indianapolis.....	B. J. Larkin.....	209	95	5,369	\$41	1	0	0	7/1	1-2	1	0
Indiana University Medical Center ¹	Indianapolis.....	W. F. Hughes.....	263	80	2,947	\$33	1	0	0	7/1	1-6	...	...
University Hospital ¹	Iowa City.....	C. S. O'Brien.....	1,105	87	6,492	\$21	1	3	0	1/1&7/1	1-4	...	...
Eye, Ear, Nose and Throat Hospital.....	New Orleans.....	W. R. Buffington.....	410	..	13,149	None	3	3	0	7/1&9/1	1-4	5	3
Johns Hopkins Hospital ¹	Baltimore.....	A. C. Woods.....	1,165	45	21,004	None	1	4	0	Quart.	2	9	4
Massachusetts Eye and Ear Infirmary.....	Boston.....	J. H. Waite.....	2,311	25	55,238	None	7	0	0	7/1	1-3	2	1
University Hospital ¹	Ann Arbor, Mich.....	F. B. Franlick.....	1,084	74	15,273	\$25	2	2	0	7/1	2	...	...
Henry Ford Hospital ¹	Detroit.....	E. L. Whitney.....	247	28	17,129	\$120*	1	2	0	9/1	2	...	...

Numerical and other references will be found on page 784.

16. OPHTHALMOLOGY—(Continued)

	Chief of Service	Inpatients Treated *	Per Cent Free *	Outpatient Visits	Beginning Salary	Residents	Assistant Residents	Fellow- ships	Service Begins	Length of Service (Years)	Deaths *	Autopsies
University Hospitals * ¹	Minneapolis..... F. E. Burch.....	264	75	6,983	\$50	0	0	2	1/1&7/1	3	2	0
Barnes Hospital *	St. Louis..... L. T. Post.....	511	9	19,940	\$25	1	4	0	7/1	1-3	1	0
St. Louis City Hospital *	St. Louis..... L. T. Post.....	271	100	6,002	\$100	1	0	0	7/1	1	...	...
St. Mary's Group of Hospitals *	St. Louis..... W. H. Luedde.....	177	39	9,137	\$25	0	0	2	7/1	3	2	0
Brooklyn Eye and Ear Hospital.....	Brooklyn.....	1,773	...	61,993	None	6	0	0	3/1, 7/1, 11/1	12	2	0
Kings County Hospital *	Brooklyn..... W. Moehle.....	510	100	12,571	\$15	1	1	0	1/1&7/1	1	6	2
Long Island College Hospital * ¹	Brooklyn..... J. N. Evans.....	267	44	7,564	\$22	1	1	2	7/1	4	...	...
Edward J. Meyer Memorial Hospital (Buffalo City Hospital) *	Buffalo..... I. Koenig.....	126	85	7,794	\$39	1	2	0	7/1	3-4	...	...
Queens General Hospital * ¹	Jamaica, N. Y..... W. G. Frey.....	270	100	9,100	\$100	1	0	0	7/1	1	2	1
Bellevue Hospital * ¹	New York City.....	531	100	...	Varies	4 ^c	0	0	1/1, 5/1, 7/1	3	...	...
Manhattan Eye, Ear and Throat Hospital	New York City.....	1,695	16	85,006	None	7	0	0	1/1, 5/1, 9/1	2 1/2	2	0
Metropolitan Hospital * ¹	New York City..... A. L. Chambers.....	155	...	5,438	\$15	1	0	0	7/1	1+	...	...
Mount Sinai Hospital * ^{1,10}	New York City.....	...	55	...	\$50	1	1	0	7/1	1	...	...
New York Eye and Ear Infirmary.....	New York City.....	2,900	13	82,782	None	8	0	0	Quart.	2-2 1/4	7	0
Presbyterian Hospital * ¹	New York City..... P. Thygeson and J. Dunnington.....	1,900	31	27,605	\$20	6	0	0	1/1&7/1	3	...	...
St. Luke's Hospital *	New York City..... W. G. Frey.....	161	41	8,635	\$25	1	0	0	7/1	1 1/2-2	...	...
Welfare Hospital for Chronic Diseases *	New York City..... J. W. Smith.....	250	100	3,800	\$100	1	0	0	7/1	1	...	...
Strong Memorial and Rochester Muni- cipal Hospital *	Rochester, N. Y..... J. F. Gipner.....	261	62	7,043	\$42	1	1	0	7/1	2	...	...
Grasslands Hospital * ¹	Valhalla, N. Y..... E. C. Wood.....	105	91	5,936	\$75	1	0	0	7/1	1-2	1	1
Cincinnati General Hospital *	Cincinnati..... D. T. Vail.....	387	87	11,184	\$1	1	1	0	7/1	1-2	3	1
City Hospital *	Cleveland..... P. W. Moore.....	187	92	4,972	\$42	1	0	0	7/1	1	2	0
University Hospitals * ¹	Cleveland..... A. B. Bruner.....	550	23	11,774	\$25	1	1	0	7/1	2	2	0
University of Oregon Medical School Hospitals and Clinics *	Portland..... F. A. Kiehle.....	146	100	15,555	\$40	1	0	0	7/1	1	...	...
Graduate Hospital of the University of Pennsylvania *	Philadelphia..... W. Shoemaker and L. C. Peter.....	333	61	5,978	None	1	0	0	7/1	1	...	...
Hospital of the University of Pennsyl- vania * ¹	Philadelphia..... F. H. Adler.....	350	27	5,987	None	0	0	3	7/1	3	1	1
Temple University Hospital *	Philadelphia..... W. I. Lillie.....	194	43	5,962	\$40	3	0	0	7/1	3	1	0
Wills Hospital.....	Philadelphia.....	3,524	67	187,813	None	8	0	0	Quart.	2	6	0
Jefferson Davis Hospital * ¹	Houston, Tex..... R. K. Daily.....	234	100	5,006	\$50	1	0	0	7/1	1-2	2	0

17. OPHTHALMOLOGY-OTOLARYNGOLOGY

San Diego County General Hospital *...	San Diego, Calif..... F. M. Bond and C. W. Brown.....	1,044	100	7,787	\$80	1	0	0	7/1	1	1	...
Hospital for Children * ²	San Francisco..... G. Hosford and R. C. Martin.....	976	4	4,095	\$25	0	1	0	7/1	1	...	...
Gallinger Municipal Hospital *	Washington, D. C..... W. T. Davis and D. Davis.....	1,389	99	2,203	\$25	1	1	0	7/1	1	2	0
Grady Hospital *	Atlanta, Ga.....	2,072	100	29,700	\$20	2	4	0	7/1	1+	17	6
Provident Hospital *	Chicago..... C. L. Forney.....	409	62	9,755	\$50	1	0	0	9/1	1-3	1	1
Louisville City Hospital *	Louisville, Ky..... C. Wolfe and W. Dean	1,337	93	11,752	\$50	1	0	0	7/1	1-2	2	0
Charity Hospital *	New Orleans.....	6,514	100	52,611	\$25	5	5	0	7/1	1-3	36	8
Touro Infirmary * ¹	New Orleans..... E. E. Allgeyer and A. J. McCormiskey.....	1,613	35	17,272	\$25	1	0	0	7/1	1	3	3
Baltimore Eye, Ear and Throat Charity Hospital.....	Baltimore.....	2,973	53	21,094	None	4	0	0	7/1	1-2	...	...
University Hospital *	Baltimore..... O. A. Clapp and E. A. Looper.....	898	50	8,330	\$25	0	1	0	7/1	1	2	...
Boston City Hospital * ¹	Boston..... J. J. Regan and L. M. Freedman.....	5,308	89	49,212	None	2	0	0	Varies	1+	42	10
City of Detroit Receiving Hospital * ¹⁰	Detroit..... P. Heath and J. M. Robb.....	993	100	6,149	\$83	1	1	0	7/1	1-2	6	3
Grace Hospital *	Detroit..... N. Bentley.....	1,521	31	7,004	\$50	1	0	0	9/1	1-2	...	...
Harper Hospital *	Detroit..... P. Heath and J. M. Robb.....	2,874	12	9,444	\$45	1	3	0	7/1	1-3	12	6
Shurly Hospital.....	Detroit..... B. R. Shurly and M. Walinger.....	751	75	14,960	\$25	3	0	0	7/1	1-2	...	...
Eloise Hospital and Infirmary *	Eloise, Mich..... R. Beattie.....	896	99	629	\$50	1	1	0	7/1	1-2	5	1
Minneapolis General Hospital * ¹	Minneapolis..... M. C. Pfunder.....	1,472	86	12,303	\$25	0	0	2	1/1	3	6	4
Mayo Foundation.....	Rochester, Minn..... (See page 784)											
Ancker Hospital *	St. Paul..... R. O. Leavenworth.....	1,259	98	12,346	\$50	2	0	0	7/1	2	3	3
Children's Mercy Hospital ¹	Kansas City, Mo.....	1,076	100	6,237	\$25	1	0	0	7/1	1-2	8	7
Kansas City General Hospital *	Kansas City, Mo..... A. W. McAlester and P. Lux.....	634	100	9,661	\$50	2	0	0	7/1	1	2	1
Jersey City Hospital *	Jersey City, N. J.....	2,535	90	12,152	None	2	1	0	7/1	1-2	17	1
Newark Eye and Ear Infirmary.....	Newark, N. J..... W. P. Eagleton.....	2,224	25	8,225	None	3	0	0	2/1, 6/1, 10/1	1 1/2	30	13
Harlem Eye and Ear Hospital ¹	New York City..... C. B. Meding.....	1,735	77	41,054	None	3	0	0	1/1, 7/1, 9/1	2	2	0
New York Polyclinic Medical School and Hospital *	New York City.....	2,034	12	25,181	None	4	0	0	1/1&7/1	2	7	1
New York Post-Graduate Medical School and Hospital *	New York City..... J. W. White and A. Nilsen.....	2,045	16	31,995	None	1	5	0	5/1&11/1	3	5	1
Rochester General Hospital *	Rochester, N. Y..... L. W. Jones and C. S. Nash.....	430	10	8,547	\$50	2	1	0	7/1	2	1	0
Duke Hospital * ¹	Durham, N. C..... W. B. Anderson and W. W. Eagle.....	1,115	63	8,144	\$42	1	2	0	7/1	3-4	6	4
Starling-Loving University Hospital *	Columbus, O..... A. D. Frost and H. G. Beatty.....	583	59	6,432	\$25	0	1	0	7/1	1	3	3
State University Hospital and Crippled Children's Hospitals *	Oklahoma City..... L. M. Westfall and T. G. Walls.....	671	95	6,431	\$50	1	0	0	7/1	1	8	6
Eye and Ear Hospital.....	Pittsburgh..... W. E. Carson and J. H. McCready.....	4,028	16	17,225	None	4	0	0	7/1	3	31	13
Knoxville General Hospital *	Knoxville, Tenn..... J. L. Montgomery.....	574	70	4,074	\$40	1	0	0	7/1	1	1	0
Nashville General Hospital.....	Nashville, Tenn..... E. L. Roberts.....	594	99	7,290	\$25	2	0	0	7/1	1-2	5	...
Memphis Eye, Ear, Nose and Throat Hospital.....	Memphis, Tenn..... E. C. Ellett.....	1,530	40	18,020	None	4	0	0	1/1&7/1	2	1	0

17. OPHTHALMOLOGY-OTOLARYNGOLOGY— (Continued)

		Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Visits	Beginning Salary	Residents	Assistant Residents	Fellow- ships	Service Debits	Length of Service (Years)	Deaths	Autopsies
Parkland Hospital * ¹	Dallas, Tex.	G. Jones	710	95	5,122	\$10	1	0	0	7/1	1-2	7	3
University of Virginia Hospital *	Charlottesville	E. P. Burton and F. D. Woodward	1,273	27	7,197	\$25	1	2	0	7/1	1	13	2
Medical College of Virginia, Hospital Division * ¹	Richmond	R. H. Courtney and K. S. Blackwell	1,347	5	11,192	\$25	1	1	0	7/1	1	...	...
King County Hospital * ^{1,13}	Seattle	A. T. Wanamaker	411	100	9,616	\$75	1	0	0	7/1	1-2	1	0
State of Wisconsin General Hospital * ¹	Madison	F. A. Davis and W. M. Nesbit	1,045	84	3,698	\$25	1	2	0	7/1	3	6	4
Milwaukee County Hospital * ¹	Wauwatosa, Wis.	E. R. Ryan	2,194	98	22,887	\$50	1	2	0	7/1	1-2	1	0

18. ORTHOPEDIC SURGERY

Revision of list is now taking place in collaboration with the American Board of Orthopaedic Surgery

Hillman Hospital *	Birmingham, Ala.	J. D. Sherrill	719	100	4,820	\$50	1	0	0	7/1	1	39	2
Children's Hospital	Los Angeles	J. C. Wilson	395	57	4,872	\$10	1	0	0	7/1	1	3	2
Los Angeles County Hospital *	Los Angeles	J. C. Wilson	4,629	100	34,480	\$10	4	0	0	4/1&10/1	1	167	7
Orthopaedic Hospital	Los Angeles	C. L. Lowman	2,178	58	17,826	\$50	3	0	0	7/1	2-3	5	5
White Memorial Hospital *	Los Angeles	G. M. Taylor	275	3	5,932	\$80	1	0	0	7/1	1-3	4	0
Hospital for Children * ²	San Francisco	L. C. Abbott	328	4	1,716	\$25	1	1	0	7/1	1	5	0
San Francisco Hospital * ¹	San Francisco	F. C. Bost	100	...	None	0	0	1	1	7/1	1	...	...
Shriners Hospital for Crippled Children	San Francisco	S. L. Haas	294	100	2,975	\$50	1	0	0	7/1	1	0	0
University of California Hospital * ¹	San Francisco	H. C. Naffziger	224	58	7,215	\$25	0	2	0	7/1	1+	1	1
Children's Hospital	Denver	D. M. McKenna	729	17	1,977	\$50	1	1	0	7/1	1-2	1	1
New Haven Hospital *	New Haven, Conn.	A. Bassin	427	37	6,124	"	1	0	0	7/1	1+	12	3
Central Dispensary and Emergency Hospital *	Washington, D. C.	G. W. Leadbetter	1,323	22	2,622	\$75	1	0	0	6/15	1	42	9
Children's Memorial Hospital	Chicago	F. A. Chandler	...	65	3,278	\$50	1	0	0	7/1	1	1	1
Cook County Hospital *	Chicago	M. H. Hobart	895	100	18,931	\$25	2	0	1	1/1&7/1	1-3	27	1
Michael Reese Hospital *	Chicago	P. Lewin	730	43	7,782	\$50	2	0	0	7/1	1-2	6	...
Research and Educational Hospital *	Chicago	H. B. Thomas	538	100	17,325	\$50	3	0	0	7/1&9/1	1-3	5	4
Shriners Hospital for Crippled Children	Chicago	B. H. Moore	306	100	2,241	\$65	1	0	0	7/1	1	0	0
University of Chicago Clinics *	Chicago	E. L. Compere	602	36	5,803	None	1	4	1	7/1	1-3	8	6
Indiana University Medical Center * ¹	Indianapolis	L. A. Ensminger	1,070	80	11,664	\$33	1	2	0	7/1	1-3	13	4
University Hospitals * ¹	Iowa City	A. Steinder	3,814	87	6,985	\$21	1	7	0	7/1	1-6	7	4
Kosair Crippled Children Hospital	Louisville, Ky.	W. B. Owen	782	100	...	\$25	1	1	0	7/1	2	1	0
Louisville City Hospital *	Louisville, Ky.	W. B. Owen	1,140	100	7,333 ^b	\$50	1	0	0	7/1	1-5	...	...
Charity Hospital *	New Orleans	...	2,226	100	9,459	\$25	3	4	0	7/1	1-3	23	1
Shriners Hospital for Crippled Children	Shreveport, La.	H. A. Durham	194	100	1,085	\$25	1	0	0	Varies	1	0	0
James Lawrence Kernan Hospital	Baltimore	A. F. Voshell	235	90	5,637	\$92	1	0	0	7/1	1	2	1
Johns Hopkins Hospital *	Baltimore	G. E. Bennett	650	45	17,953	None	1	2	0	7/1&9/1	1-4	5	3
Boston City Hospital * ¹	Boston	O. J. Hermann	1,288	89	429	"	1	1	0	Varies	1+	24	0
Children's Hospital	Boston	F. R. Ober	369	53	9,334	\$56	1	0	0	9/1	1	3	2
Lahey Clinic	Boston	G. E. Haggart	569	...	6,000	\$102	0	0	1	9/1	1-3	3	2
Massachusetts General Hospital *	Boston	S. M. Smith-Petersen	763	48	18,665	\$14	0	0	1	1/1	1	3	1
Shriners Hospital for Crippled Children	Springfield, Mass.	R. N. Hatt	383	100	2,915	\$25	1	0	0	7/1	1	2	0
University Hospital * ¹	Ann Arbor, Mich.	C. Badgley	3,422	74	15,325	\$25	2	5	0	7/1	1-5	15	9
Henry Ford Hospital *	Detroit	C. L. Mitchell	695	28	11,808	\$130 ^c	1	1	0	9/1	2-3	2	1
Mayo Foundation	Rochester, Minn.	(See page 784)	...	...	...	...	...	...	...	...	...	...	...
Gillette State Hospital for Crippled Children	St. Paul	C. C. Chatterton	853	100	8,003	\$50	0	0	1	7/1	1	8	8
State Hospital for Crippled Children	Columbia, Mo.	W. J. Stewart	649	1	1,754	\$50	1	0	0	7/1	1-2	5	2
Kansas City General Hospital *	Kansas City, Mo.	F. D. Dickson	716	100	3,585	\$50	1	0	0	7/1	1	40	33
St. Luke's Hospital *	Kansas City, Mo.	F. D. Dickson	642	...	3,125	\$50	1	0	0	7/1	1	9	7
St. Mary's Group of Hospitals *	St. Louis	A. O'Reilly	191	39	4,488	\$25	0	2	7	7/1	3	8	3
Shriners Hospital for Crippled Children	St. Louis	C. H. Crego	447	100	...	\$135	1	0	0	7/1	1-2	...	...
Nebraska Orthopedic Hospital	Lincoln	H. W. Orr	753	...	349 ^b	\$75	1	0	0	7/1	1-2	8	3
Jersey City Hospital *	Jersey City, N. J.	...	1,047	90	21,233	\$75	1	1	0	7/1	1-2	44	2
Hospital and Home for Crippled Children	Newark, N. J.	J. E. Toye	255	82	3,000	\$100	1	0	0	7/1	1	2	...
New Jersey Orthopaedic Hospital and Dispensary	Orange, N. J.	H. W. Smith	462	32	24,087	\$50	1	1	0	1/1&7/1	1-1½	5	0
Kings County Hospital *	Brooklyn	J. L'Episcopo	1,196	100	14,204	\$15	1	1	0	7/1	2	19	3
Long Island College Hospital *	Brooklyn	J. C. Rushmore	429	44	13,584	\$22	1	1	0	7/1	2-3	8	2
Buffalo General Hospital *	Buffalo	W. W. Plummer	586	9	...	\$25	0	1	0	7/1	1	18	2
Bellvue Hospital * ¹	New York City	A. Krida	255	100	...	\$15	4	0	0	1/1&7/1	2	...	...
Hospital for Joint Diseases *	New York City	...	3,066	60	43,954	\$25	14	0	0	1/1	3	21	7
Hospital for Ruptured and Crippled	New York City	P. D. Wilson	1,480	17	24,853	\$20	2	6	2	1/1&7/1	2	10	7
Metropolitan Hospital * ¹	New York City	A. H. Bingham	678	...	2,687	\$75	1	0	0	7/1	1+	20	1
Mount Sinai Hospital * ^{1,10}	New York City	...	...	55	...	\$50	1	0	0	7/1	1	...	...
New York Orthopaedic Dispensary and Hospital	New York City	B. P. Farrell	1,126	54	95,871	\$33	8	0	0	Quart.	3	1	1
St. Luke's Hospital *	New York City	M. Cleveland	234	41	4,481	\$25	1	0	0	1/1&7/1	2	4	3
Strong Memorial and Rochester Municipal Hospitals *	Rochester, N. Y.	R. P. Schwartz	656	62	7,571	\$67	1	0	0	7/1	1-2	...	...
Sea View Hospital *	Staten Island, N. Y.	D. Bosworth	240	...	None	2	2	0	0	1/1&7/1	1	28	10
New York State Reconstruction Home	West Haverstraw, N. Y.	C. Wallace	220	...	169	\$100	1	1	0	3/1&9/1	1½	4	0
Duke Hospital *	Durham, N. C.	D. Hart	539	63	5,356	\$42	1	1	0	7/1	3-4	5	2
Cincinnati General Hospital *	Cincinnati	J. A. Freiberg	284	57	3,931	"	1	1	0	7/1	1-2	4	1
Cleveland Clinic Foundation Hospital	Cleveland	J. A. Dickson	346	...	6,376	\$56	0	3	7	7/1	1-3	2	1
Mount Sinai Hospital * ¹	Cleveland	R. S. Reich	813	13	6,897	\$60	1	0	0	7/1	1	4	1
University Hospitals * ¹	Cleveland	M. Harbin	593	28	7,006	\$50	1	0	0	7/1	2	7	5
Bone and Joint Hospital and McBride Clinic	Oklahoma City	E. D. McBride	611	...	11,750	\$50	1	0	0	1/1	2	6	0
St. Anthony Hospital *	Oklahoma City	W. K. West	749	8	...	\$50	1	0	0	7/1	1	4	0
State University and Crippled Children's Hospitals *	Oklahoma City	P. C. Colonna	1,340	95	8,744	\$50	3	0	1	7/1	3	26	8
Mersey Hospital for Crippled Children	Tulsa, Okla.	W. Sisler	2,000	25	2,400	\$50	2	0	0	7/1	1	23	5
Emanuel Hospital *	Portland, Ore.	R. B. Dillehunt	795	10	...	\$40	1	0	0	7/1	1	0	0
Shriners Hospital for Crippled Children	Portland, Ore.	R. B. Dillehunt	337	100	2,422	\$40	1	0	0	7/1	1	0	0

Numerical and other references will be found on page 784.

18. ORTHOPEDIC SURGERY—(Continued)

	Chief of Service	Inpatients Treated	Per Cent Fees	Outpatient Visits	Beginning Salary	Residents	Assistant Residents	Fellow- ships	Service Beginns	Length of Service (Years)	Deaths	Autopsies
State Hospital for Crippled Children...	Elizabethtown, Pa....	T. Outland	306	100	795	\$100	3	0	0			1
Philadelphia Orthopaedic Hospital and Infirmary for Nervous Diseases.....	Philadelphia.....	A. B. Gill and D. P. Willard	269	74	4,290	\$40	1	0	0	7/1	1	0
Temple University Hospital *	Philadelphia.....	J. R. Moore	634	43	5,150	\$40	3	0	0	7/1	3	11
Robert Packer Hospital *	Sayre, Pa.....	T. Outland and C. R. Hanlon	536	55	2,965	\$75	1	0	0	9/1	2	0
Willis C. Campbell Clinic.....	Memphis, Tenn.....	W. C. Campbell	1,149	35	11,201	\$50	6	0	0	1/1&7/1	3	11
Parkland Hospital * ¹	Dallas, Tex.....	R. Jackson	533	95	6,430	\$10	1	0	0	7/1	1	26
Texas Scottish Rite Hospital for Crip- pled Children ¹	Dallas, Tex.....	W. B. Carrell	722	100	2,884	\$25	1	1	0	7/1	1	0
University of Virginia Hospital *	Charlottesville.....	R. V. Funsten	557	27	3,993	\$33	1	1	0	7/1	1	12
Children's Orthopedic Hospital ¹	Seattle.....	H. J. Wyckoff	452	90	3,933	\$100	1	0	0	7/1	1	6
State of Wisconsin General Hospital *	Madison.....	R. E. Burns	3,602	84	4,509	\$25	3	2	0	7/1	3	7
Milwaukee County Hospital * ¹	Wauwatosa, Wis.....	W. P. Blount	427	98	10,653	\$50	1	1	0	7/1	1	58

19. OTOLARYNGOLOGY

Children's Hospital	Los Angeles.....	J. M. Brown	1,233	57	5,920	\$90	1	0	0	7/1	1	3
Los Angeles County Hospital * ¹	Los Angeles.....	J. M. Brown	3,038	100	35,836	\$10	3	0	0	4/1&7/1	2	51
White Memorial Hospital *	Los Angeles.....	B. N. Colver	1,370	3	13,527	\$50	2	0	0	7/1	1-3	1
San Francisco Hospital * ¹	San Francisco.....	L. F. Morrison and H. A. Fletcher	660 ^a	100	.....	\$50	2	0	0	7/1	1	...
Stanford University Hospitals * ¹	San Francisco.....	E. C. Sewall	1,104	2	11,694	\$25	1	1	0	7/1	1-2	4
University of California Hospital * ¹	San Francisco.....	H. C. Naffziger	824	58	8,713	\$25	0	1	0	7/1	1+	1
New Haven Hospital *	New Haven, Conn.....	N. Canfield	823	37	6,020	*	1	1	0	7/1	1+	6
Episcopal Eye, Ear and Throat Hospital	Washington, D. C.....		6,244 ^a	27	13,956	\$7	1	3	0	3/1, 7/1, 11/1	1-3	4
Cook County Hospital * ¹	Chicago.....	S. J. Pearlman	7,125	100	27,849	\$25	5	0	0	1/1&7/1	1-3	120
Illinois Eye and Ear Infirmary ¹	Chicago.....	H. S. Gradle	2,954	100	144,200	None	6	0	0	1/1&7/1	1	9
Michael Reese Hospital *	Chicago.....	J. Strauss	2,753	43	4,745	\$50	1	0	0	7/1	1	9
Passavant Memorial Hospital *	Chicago.....	J. G. Wilson	316	14	1,331	None	1	0	0	1/1&7/1	1	...
Presbyterian Hospital *	Chicago.....	D. Hayden	1,067	13	.....	\$50	1	1	0	1/1&7/1	1	2
Research and Educational Hospital *	Chicago.....	F. Lederer	817	100	13,601	\$50	1	0	0	7/1&9/1	1-3	4
University of Chicago Clinics *	Chicago.....	J. R. Lindsay	923	36	12,790	None	1	2	1	7/1	1-2	5
Indianapolis City Hospital *	Indianapolis.....	R. Chappell	1,513	95	7,908	\$11	1	1	0	7/1	1-2	4
Indiana University Medical Center * ¹	Indianapolis.....	C. H. McCaskey	758	80	2,189	\$33	1	1	0	7/1	1-2	7
University Hospitals * ¹	Iowa City.....	D. M. Lierle	2,325	67	6,934	\$21	1	4	0	7/1	1-6	25
Eye, Ear, Nose and Throat Hospital...	New Orleans.....	P. E. Lejeune	3,212	..	30,594	None	6	0	0	7/1	2	12
Johns Hopkins Hospital *	Baltimore.....	S. J. Crowe	1,223	45	14,424	None	1	2	0	7/1&9/1	1-4	4
Beth Israel Hospital *	Boston.....	L. Arkin and H. M. Freedman	1,113	21	403	None	1	0	0	7/1	1	...
Lahey Clinic	Boston.....	W. B. Hoover	.....	..	10,000	\$100 ^c	0	1	0	7/1	2	...
Massachusetts Eye and Ear Infirmary...	Boston.....	L. A. Schall	3,531	25	45,573	None	7	0	0	Quart.	1-3	23
Memorial Hospital *	Worcester, Mass.....	G. Berry	1,515	13	3,038	\$42	1	0	0	7/1	1	6
University Hospital * ¹	Ann Arbor, Mich.....	A. C. Furstenberg	1,642	74	14,821	\$25	1	2	0	7/1	1-4	18
Henry Ford Hospital *	Detroit.....	J. L. Dill	945	28	16,156	\$130	1	2	0	9/1	3	5
University Hospitals * ¹	Minneapolis.....	H. Newhart	332	75	6,616	\$50	0	0	2	1/1&7/1	3	8
Barnes Hospital *	St. Louis.....	L. W. Dean	1,314	9	13,867	\$25	0	6	0	7/1	1-3	12
Jewish Hospital *	St. Louis.....	S. B. Westlake	388	24	1,954	\$63	1	0	0	7/1	1-5	4
St. Louis City Hospital *	St. Louis.....	E. L. Myers	1,694	100	10,276	\$50	1	0	0	7/1	1	32
St. Mary's Group of Hospitals *	St. Louis.....	W. E. Sauer	1,026	39	6,464	\$25	1	0	0	7/1	1	3
Newark City Hospital *	Newark, N. J.....	W. P. Eagleton	2,893	100	.....	\$20	1	0	0	10/1	1	...
Brooklyn Eye and Ear Hospital...	Brooklyn.....		6,504	..	64,422	None	8	0	0	Quart.	2	8
Jewish Hospital * ¹	Brooklyn.....	E. L. Berger	599	31	6,362	None	1	0	0	7/1	1	14
Kings County Hospital *	Brooklyn.....	M. O. Myerson	3,450	100	15,120	\$15	1	2	0	7/1	2	72
Long Island College Hospital * ¹	Brooklyn.....	R. L. Moorhead	901	44	5,799	\$22	1	1	0	7/1	2	72
Buffalo General Hospital *	Buffalo.....	J. F. Fairbairn	1,127	9	.....	\$25	1	2	0	7/1	1	8
Edward J. Meyer Memorial Hospital (Buffalo City Hospital) *	Buffalo.....	J. F. Fairbairn	654	85	7,318	\$59	1	2	0	7/1	3-4	6
Queens General Hospital * ¹	Jamaica, N. Y.....	M. S. Bender	2,206	100	8,012	\$15	1	1	0	7/1	1-2	14
Bellevue Hospital * ¹	New York City.....	J. Fowles	3,326	100	.....	Varies	6 ^c	0	3/1, 7/1, 11/1	2	...	...
Flower-Fifth Avenue Hospital *	New York City.....	J. A. W. Hetrick	909	5	7,830	\$50	1	0	0	7/1	2	1
Manhattan Eye, Ear and Throat Hosp.	New York City.....		14,564	16	91,552	None	8	0	0	Quart.	2	22
Metropolitan Hospital * ¹	New York City.....	J. A. W. Hetrick	1,231	..	5,422	\$100	1	0	0	7/1	1+	5
Mount Sinai Hospital * ^{1,10}	New York City.....		.....	55	.....	\$50	1	1	0	7/1	1	...
New York City Hospital *	New York City.....	O. C. Risch	1,248	100	3,207	\$100	1	0	0	7/1	1	6
New York Eye and Ear Infirmary...	New York City.....		3,031	13	45,413	None	8	0	0	Quart.	2-2 1/2	8
Presbyterian Hospital * ¹	New York City.....	J. D. Kernan	1,836	31	29,808	\$42	1	5	0	1/1&7/1	3	17
Roosevelt Hospital *	New York City.....	C. N. Harper	961	9	7,762	None	1	1	0	Varies	2	1
St. Luke's Hospital *	New York City.....	W. C. Bowers	846	41	8,522	\$25	1	2	0	3/1&9/1	2	1
Strong Memorial and Rochester Muni- cipal Hospitals *	Rochester, N. Y.....	O. A. Heatly	1,201	62	7,612	\$42	1	1	0	7/1	2	...
Sea View Hospital ¹	Statens Island, N. Y.....	M. O. Myerson	2,708	..	.....	\$100	2	0	0	1/1&7/1	1	...
Grasslands Hospital *	Valhalla, N. Y.....	M. T. Smith	509	91	3,255	\$75	1	0	0	7/1	1-2	11
Cincinnati General Hospital *	Cincinnati.....	S. Iglauer	1,349	87	8,023	*	0	2	0	7/1	1-2	9
City Hospital *	Cleveland.....	W. V. Engler	991	92	5,471	\$42	1	1	0	7/1	1 1/2	2
Cleveland Clinic Foundation Hospital...	Cleveland.....	P. M. Moore	325	..	8,460	\$50	0	3	0	7/1	1-2	2
St. Luke's Hospital *	Cleveland.....	W. H. Tuckerman	2,013	17	4,719	\$25	1	1	0	6/25	2	7
University Hospitals * ¹	Cleveland.....	C. E. Pitkin	2,241	25	10,978	\$25	1	2	0	Varies	2	6
University of Oregon Medical School Hospitals and Clinics *	Portland.....	R. A. Fenton	280	100	12,373	\$10	1	0	0	7/1	1	2
George F. Gelsinger Memorial Hospital *	Danville, Pa.....	F. W. Davison	729	41	4,623	\$50	1	0	0	7/1	1	4
Graduate Hospital of the University of Pennsylvania *	Philadelphia.....	G. B. Wood and R. Butler	2,453	61	6,895	None	2	0	0	7/1	1	13
Jefferson Medical College Hospital *	Philadelphia.....	L. H. Clerk and H. Williams	1,472	77	12,127	None	1	0	0	7/1	1-3	22
Temple University Hospital *	Philadelphia.....	R. F. Ridpath and M. S. Ernsner	1,479	43	6,044	\$40	1	0	0	7/1	3	2
Gill Memorial Eye, Ear and Throat Hosp.	Roanoke, Va.....	E. G. Gill	719	20	11,525	\$50	1	1	0	1/1&7/1	1-2	...

20. PATHOLOGY

Revision of list is now taking place in collaboration with the American Board of Pathology

	Chief of Service	Surgical Pathology				Residents	Assistant Residents	Fellowships	Service Begins	Length of Service (Years)	Deaths	Autopsies
		Inpatients Treated	Gross Examinations	Microscopic Examinations	Beginning Salary							
Hillman Hospital *	Birmingham, Ala.	12,854	.....	.....	\$50	1	0	0	7/1	1	830	192
Children's Hospital	Los Angeles	4,376	238	223	\$90	1	0	0	7/1	1	131	119
Los Angeles County Hospital *	Los Angeles	50,715	.....	.....	\$10	6	0	0	1/1&7/1	3	3,963	2,025
St. Vincent's Hospital *	Los Angeles	7,305	1,830	1,830	\$60	1	0	0	7/1	1-3	192	79
Alameda County Hospital *	Oakland, Calif.	12,513	4,208	2,846	\$40	1	1	0	7/1	1-3	667	405
Collis P. and Howard Huntington Memorial Hospital *	Pasadena, Calif.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
French Hospital *	San Francisco	5,850	3,205	2,246	\$100	1	0	0	7/1	3	242	155
Mount Zion Hospital *	San Francisco	3,720	539	278	\$50	1	0	0	7/1	1	124	89
San Francisco Hospital *	San Francisco	3,984	1,639	671	\$50	2	0	0	6/15	1	155	101
Stanford University Hospitals *	San Francisco	15,803	.....	2,318	\$25	2	0	1	7/1	1	913	522
University of California Hospital *	San Francisco	9,037	2,099	2,075	\$25	0	1	0	7/1	1	213	121
Denver General Hospital *	Denver	7,256	2,659	2,639	\$25	1	0	0	7/1	1+	162	125
New Haven Hospital *	New Haven, Conn.	7,763	3,033	2,203	\$30	1	0	0	7/1	1	567	536
Children's Hospital	Washington, D. C.	9,765	2,686	2,686	a	1	3	0	7/1	1+	441	315
Gallinger Municipal Hospital *	Washington, D. C.	6,904	149	36	\$50	1	0	0	7/1	1	207	135
Garfield Memorial Hospital *	Washington, D. C.	15,889	1,425	1,425	\$25	1	0	0	7/1	1	1,143	430
Sibley Memorial Hospital *	Washington, D. C.	10,620	1,723	1,385	\$50	1	0	0	7/1	1	231	118
Grady Hospital *	Atlanta, Ga.	8,310	2,182	453	\$65	1	0	0	7/1	1	237	119
University Hospital *	Augusta, Ga.	21,274	2,066	2,052	\$20	2	0	0	7/1	1+	1,563	453
Emory University Hospital *	Emory University, Ga.	8,057	2,261	1,809	\$40	0	1	0	7/1	1	400	157
Children's Memorial Hospital	Chicago	6,711	1,567	1,567	\$50	1	0	0	7/1	3	201	100
Cook County Hospital *	Chicago	3,785	196	195	?	1	0	0	1/1&7/1	1-2	119	86
Michael Reese Hospital *	Chicago	79,795	7,939	5,732	\$25	3	0	16	1/1&7/1	1-3	6,561	1,246
Mt. Sinai Hospital *	Chicago	17,570	3,744	3,744	\$50	1	1	1	7/1	1+	520	303
Passavant Memorial Hospital *	Chicago	7,263	3,392	2,101	\$50	1	1	0	6/1&7/1	1	232	117
Presbyterian Hospital *	Chicago	5,043	911	903	None	2	0	0	Varies	1-3	140	110
Provident Hospital *	Chicago	11,514	2,090	2,090	\$50	2	0	0	1/1&7/1	1	270	155
Research and Educational Hospital *	Chicago	4,284	816	816	\$50	1	0	0	9/1	1-3	172	74
St. Luke's Hospital *	Chicago	5,831	1,500	1,500	\$50	2	0	0	7/1&9/1	1-3	205	175
University of Chicago Clinics *	Chicago	12,100	4,639	4,350	\$75	0	0	1	1/1	2	257	183
Evanston Hospital *	Evanston, Ill.	10,776	1,476	1,244	\$25	1	0	0	7/1	1	243	186
St. Francis Hospital *	Evanston, Ill.	9,221	1,556	1,399	\$83	0	1	0	10/1	1	173	136
Methodist Hospital of Central Illinois *	Peoria	9,292	1,979	341	\$50	1	0	0	7/1	1+	191	91
Indianapolis City Hospital *	Indianapolis	6,226	2,108	1,858	\$25	1	0	0	7/1	1-3	238	80
Indiana University Medical Center *	Indianapolis	11,671	2,527	2,476	\$41	1	0	0	7/1	1	846	530
Methodist Hospital *	Indianapolis	9,790	2,968	2,900	\$33	2	0	1	7/1	1-3	416	251
Ball Memorial Hospital *	Muncie, Ind.	23,917	4,449	4,449	\$50	1	2	0	7/1	1-2	514	164
University Hospitals *	Iowa City	5,101	2,020	1,810	\$75	1	0	0	7/1	1	277	104
University of Kansas Hospitals *	Kansas City, Kan.	19,176	2,883	2,883	\$55	1	0	0	7/1	1-6	511	306
St. Francis Hospital *	Wichita, Kan.	5,862	1,982	1,896	\$50	1	3	0	7/1	1-3	269	188
Louisville City Hospital *	Louisville, Ky.	6,535	2,709	2,709	\$25	1	0	0	7/1	1	290	155
Charity Hospital *	New Orleans	12,013	1,959	1,959	\$14	3	0	0	7/1	1-2	690	323
Touro Infirmary *	New Orleans	61,856	8,772	8,762	\$25	2	1	0	7/1	1+	3,236	1,401
Baltimore City Hospitals *	Baltimore	11,911	3,222	3,222	\$50	1	0	0	7/1	2	335	150
Johns Hopkins Hospital *	Baltimore	8,839	1,220	1,193	\$12	1	1	0	7/1	1	1,224	526
Boston City Hospital *	Boston	17,458	3,631	3,631	None	1	2	0	1/1&9/1	1-3	479	310
Boston Lying-in Hospital	Boston	42,903	4,170	4,170	None	5	0	0	Varies	1+	2,093	800
Children's Hospital *	Boston	5,671	4,214	4,214	\$50	2	0	0	1/1&7/1	1	63	69
Massachusetts General Hospital *	Boston	5,557	678	678	\$56	1	0	0	7/1	1	125	81
Massachusetts Memorial Hospitals *	Boston	15,352	6,468	6,468	\$42	1	0	0	7/1	1	547	238
New England Deaconess Hospital *	Boston	7,572	.....	1,480	\$100	1	0	0	7/1	1-3	173	118
Peter Bent Brigham Hospital *	Boston	7,655	5,215	5,215	\$15	1	2	0	7/1	1-2	352	187
Worcester City Hospital *	Worcester, Mass.	5,190	2,095	2,095	\$83	1	0	0	1/1&9/1	1-3	316	218
Worcester State Hospital	Worcester, Mass.	11,181	3,806	2,800	None	1	0	0	7/1	1	192	107
University Hospital *	Ann Arbor, Mich.	821	.....	3,618	None	2	0	0	1/1&7/1	1	191	401
City of Detroit Receiving Hospital *	Detroit	23,847	7,828	7,828	\$25	0	1	0	7/1	1	693	435
Harper Hospital *	Detroit	20,831	2,607	.....	\$83	1	1	0	7/1	1-2	1,091	651
Henry Ford Hospital *	Detroit	17,089	5,651	5,651	.....	1	0	0	7/1	1+	441	175
Providence Hospital *	Detroit	11,996	3,321	3,321	\$130	2	0	1	9/1	1-3	333	192
Eloise Hospital and Infirmary *	Eloise, Mich.	12,052	3,000	2,763	.....	1	0	0	7/1	1	470	121
Hurley Hospital *	Flint, Mich.	14,382	5,065	1,228	\$67	1	0	1	7/1	1	1,024	333
St. Luke's Hospital *	Duluth, Minn.	7,822	3,263	2,539	\$42	1	0	0	7/1	1	518	195
Mayo Foundation	Rochester, Minn.	6,906	1,500	1,449	\$20	1	0	0	7/1	1-3	255	185
Ancker Hospital *	St. Paul	(See page 784)	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Kansas City General Hospital *	Kansas City, Mo.	10,169	1,415	1,187	\$50	1	0	0	6/1	1	749	541
St. Joseph Hospital *	Kansas City, Mo.	12,067	2,286	1,800	\$50	2	0	0	7/1	1-3	772	587
St. Luke's Hospital *	Kansas City, Mo.	6,187	2,800	2,400	\$50	1	0	0	6/20	1-3	248	175
Barnes Hospital *	St. Louis	5,135	3,822	2,784	\$50	1	0	0	7/1	1-3	166	135
Jewish Hospital *	St. Louis	10,091	2,374	2,374	\$25	1	0	0	7/1	1	323	63
St. Louis City Hospital *	St. Louis	6,658	1,466	1,466	.....	1	0	7	7/1	1	239	61
Creighton Memorial St. Joseph's Hosp. *	Omaha	18,954	2,796	2,796	\$50	1	0	0	7/1	1-2	1,296	671
University of Nebraska Hospital *	Omaha	8,451	.....	.....	\$50	1	0	0	7/1	1+	312	91
Mary Hitchcock Mem	.....	3,439	1,041	1,041	\$50	1	0	0	7/1	1	167	126
Mountainside Hospi	.....	4,855	1,169	1,037	\$33	1	0	0	7/1	1	106	82
Newark Beth Israel	.....	6,423	2,034	2,034	\$100	1	0	0	1/1	1+	212	67
Albany Hospital *	Albany, N. Y.	11,738	3,739	3,739	\$25	1	1	0	1/1	2	331	192
Bender Hygienic Laboratory	Albany, N. Y.	12,200	5,096	5,096	\$25	1	5	0	7/1	1	452	238
Binghamton City Hospital *	Binghamton, N. Y.	.....	5,959	5,959	\$100	1	1	0	7/1	1-4	.....	125
Brooklyn Hospital *	Brooklyn	6,066	.....	.....	\$50	1	0	0	7/1	1	350	155
Cumberland Hospital *	Brooklyn	8,395	1,867	1,750	\$25	1	0	0	7/1	1-3	191	119
Jewish Hospital *	Brooklyn	8,545	.....	.....	\$15	1	0	0	7/1	1	300	291
Kings County Hospital *	Brooklyn	12,702	6,340	5,234	\$25	1	1	0	7/1	1	512	222
Long Island College Hospital *	Brooklyn	60,063	.....	.....	\$50	1	4	0	7/1	1-2	5,621	1,001
St. John's Hospital *	Brooklyn	9,230	2,065	2,065	\$45	1	0	0	7/1	1	236	129
Buffalo General Hospital *	Buffalo	5,260	1,055	1,045	\$25	1	0	0	7/1	1	249	105
Edward J. Meyer Memorial Hospital	Buffalo	10,618	5,301	5,301	\$25	1	2	0	7/1	1	525	233
Millard Fillmore Hospital *	Buffalo	10,964	2,501	2,501	\$59	1	2	0	7/1	1-3	1,003	292
Meadowbrook Hospital *	Hempstead, N. Y.	6,837	4,123	3,636	\$25	1	0	0	7/1	1-2	267	81
Queens General Hospital *	Jamaica, N. Y.	6,180	1,463	1,414	\$50	2	0	0	7/1	1	442	221
Forham Hospital *	New York City	13,208	4,291	2,747	\$15	1	1	1	7/1	1	761	450
		14,532	15,924	13,455	\$15	1	0	0	7/1	1	931	234

Numerical and other references will be found on page 784.

20. PATHOLOGY—(Continued)

		Chief of Service	Inpatients Treated	Surgical Pathology		Beginning Salary	Residents	Assistant Residents	Fellow- ships	Service Begins	Length of Service (Years)	Deaths	Autopsies
				Gross Examinations	Microscopic Examinations								
Harlem Hospital *	New York City	S. Weintraub	18,963	2,503	2,503	\$15	1	1	0	1/1&7/1	1	1,366	344
Lenox Hill Hospital *	New York City	G. L. Rohdenburg	11,734	2,000	2,000	None	1	0	0	7/1	1	264	131
Lincoln Hospital *	New York City	C. Brown	9,666	10,030	10,030	\$15	2	0	0	7/1	1	512	567
Metropolitan Hospital *	New York City	A. Saccone	13,151	1,337	1,300	\$70	1	0	0	7/1	1+	959	263
Montefiore Hosp. for Chronic Diseases *	New York City	D. Marine	1,715	617	617	\$50	1	0	0	7/1	1	445	320
Morrisania City Hospital *	New York City	W. Aronson	12,044	2,764	2,764	\$15	1	0	0	7/1	1	909	277
Mount Sinai Hospital * ^{1,10}	New York City	P. Klempner	16,726	6,031	6,031	...	2	0	5	7/1	1	782	330
New York City Hospital *	New York City	J. R. Lisa	10,658	1,551	1,250	\$100	1	0	0	7/1	1-2	804	330
New York Hospital *	New York City	E. L. Opie	16,312	3,554	3,458	None	1	0	0	7/1	1-2	451	276
New York Post-Graduate Medical School and Hospital *	New York City	M. N. Richter	9,146	6,201	6,201	\$90	1	0	0	7/1	1	238	109
Presbyterian Hospital *	New York City	J. W. Jobling	17,449	3,979	3,979	None	1	0	0	7/1	1	533	262
Roosevelt Hospital *	New York City	W. W. Brandes	7,553	2,172	2,102	\$12	1	0	0	7/1	1-2	302	112
St. Luke's Hospital *	New York City	F. C. Wood	8,457	2,346	2,316	\$100	0	1	0	1/1	1-3	303	169
Sydenham Hospital *	New York City	A. M. Ginzler	4,639	2,204	2,147	None	1	0	0	1/1	1+	227	115
Willard Parker Hospital	New York City	V. B. Dolgopool	4,156	115	115	\$100	1	0	0	1/1	1	110	69
Strong Memorial and Rochester Muni- cipal Hospitals *	Rochester, N. Y.	G. H. Whipple	14,673	2,873	2,873	\$42	2	1	2	7/1	1-2	545	365
Grasslands Hospital *	Valhalla, N. Y.	G. Dalldorf	5,788	1,900	1,374	\$117	2	0	0	1/1&7/1	1-3	454	330
Duke Hospital *	Durham, N. C.	W. D. Forbus	11,363	8,537	8,537	\$12	1	5	1	7/1	1-4	358	193
Cincinnati General Hospital *	Cincinnati	R. S. Austin	15,979	...	2,709	...	6	0	0	7/1	1-2	1,126	781
City Hospital *	Cleveland	H. S. Reichle	14,034	2,355	1,789	\$12	4	1	0	7/1	1	1,307	523
Mount Sinai Hospital *	Cleveland	B. S. Kline	8,638	1,781	1,781	\$50	1	0	0	7/1	1	257	81
St. Luke's Hospital *	Cleveland	R. Dominguez	12,421	2,779	2,530	\$25	1	1	0	6/25	2	339	118
St. Vincent Charity Hospital *	Cleveland	D. J. Rehbock	6,317	1,195	1,174	\$50	1	0	0	7/1	1	348	139
University Hospitals *	Cleveland	H. T. Karsner	20,151	4,439	4,439	\$25	1	1	0	7/1	2	575	348
Starling-Loving University Hospital *	Columbus	H. L. Reinhart	6,028	2,705	2,614	\$25	1	1	0	7/1	1	285	109
Miami Valley Hospital *	Dayton, O.	W. M. Simpson	10,749	4,003	4,003	\$75	1	0	0	7/1	1	472	175
State University Crippled Children's Hospital *	Oklahoma City	M. Hart	6,532	1,963	1,462	\$50	1	0	1	7/1	1-3	270	149
St. Vincent's Hospital *	Portland, Ore.	T. D. Robertson	10,863	5,560	3,341	\$25	2	0	0	1/1&7/1	1	342	193
University of Oregon Medical School Hospitals and Clinics *	Portland	F. R. Menne	7,569	1,809	1,809	\$40	3	0	0	7/1	1	649	407
Abington Memorial Hospital *	Abington, Pa.	J. Elman	6,532	1,749	1,711	\$100	1	0	0	10/1	1+	118	124
George F. Geisinger Memorial Hosp. *	Danville, Pa.	H. F. Hunt	5,625	1,406	1,358	\$50	1	0	0	7/1	1	232	85
Pittsburgh City Home and Hospitals *	Mayview, Pa.	G. H. Fetterman	806	169	169	\$135	1	1	0	9/1	1	624	125
Germantown Dispensary and Hospital *	Philadelphia	F. B. Lynch, Jr.	7,596	1,282	711	\$125	1	0	0	7/1	1	284	109
Graduate Hospital of the University of Pennsylvania *	Philadelphia	E. A. Case	6,932	1,825	1,825	None	1	0	0	7/1	1	246	111
Hahnemann Hospital *	Philadelphia	S. W. Sappington	12,969	3,417	3,417	\$50	2	0	0	9/1	1-3	301	194
Hospital of the University of Pennsylv- ania *	Philadelphia	E. R. Krumbhaar	11,268	1,645	1,645	None	2	0	1	7/1&9/1	1	214	161
Jewish Hospital *	Philadelphia	E. Steinfeld	9,077	2,006	2,006	\$75	1	0	0	6/15	1	369	529
Mount Sinai Hospital *	Philadelphia	D. R. Meranze	7,534	1,900	1,900	None	1	0	0	9/1	1	185	101
Pennsylvania Hospital *	Philadelphia	J. T. Bauer	8,503	1,555	1,855	\$20	0	0	2	7/1&9/1	1-2	263	159
Philadelphia General Hospital *	Philadelphia	J. H. Clark	23,369	2,892	2,799	\$50	2	0	0	7/1	1-2	3,229	1,037
Presbyterian Hospital *	Philadelphia	R. P. Custer	5,375	1,284	1,275	\$50	1	0	0	6/1	1	218	204
Temple University Hospital *	Philadelphia	L. W. Smith	9,951	19,039	19,039	\$40	2	0	0	9/1	1-3	101	55
Allegheny General Hospital *	Pittsburgh	S. R. Haythorn	9,350	2,235	2,235	\$55	2	0	0	9/1	1	330	161
Children's Hospital	Pittsburgh	G. W. Grier	3,286	179	179	\$12	1	0	0	9/1	1	204	81
Elizabeth Steel Magee Hospital	Pittsburgh	G. W. Grier	9,466	1,888	1,800	\$12	2	0	0	9/1	1	176	73
Mercy Hospital *	Pittsburgh	H. H. Permar	12,599	3,206	3,046	\$90	2	0	0	9/1	1	405	153
Montefiore Hospital *	Pittsburgh	K. Yardumian	7,118	1,201	1,201	\$50	1	0	0	9/1	1-3	229	96
Presbyterian Hospital *	Pittsburgh	G. R. Lacy	3,116	1,192	...	\$42	1	0	0	9/1	1	124	51
St. Francis Hospital *	Pittsburgh	A. J. Bruecken	14,217	5,701	1,883	\$65	4	0	0	9/1	1	442	96
Western Pennsylvania Hospital *	Pittsburgh	P. Gross	9,591	1,859	1,859	\$75	1	1	0	7/1	2	257	93
Reading Hospital *	Reading, Pa.	E. D. Funk	6,561	1,733	1,121	\$53	1	0	0	7/1	1-2	272	183
Rhode Island Hospital *	Providence	B. E. Clarke	7,890	2,460	2,460	\$50	1	0	0	7/1	1	525	289
John Gaston Hospital *	Memphis, Tenn.	H. C. Schmeisser	15,976	2,044	2,044	\$22	1	1	0	7/1	1-3	1,069	237
Nashville General Hospital *	Nashville, Tenn.	W. A. DeMonbreun	7,152	937	919	\$20	1	1	0	7/1	1-2	424	177
Vanderbilt University Hospital *	Nashville, Tenn.	E. W. Goodpasture	7,226	1,351	1,351	\$33	1	2	0	7/1	2	351	128
Baylor University Hospital *	Dallas	J. M. Hill	15,343	5,013	5,013	\$50	1	0	1	7/1	1	345	129
Parkland Hospital *	Dallas	A. B. Cairns	10,771	2,637	2,124	\$10	1	0	0	7/1	1	601	203
Jefferson Davis		D. G. Henderson	11,095	1,899	1,899	\$50	1	0	0	7/1	1-2	1,076	351
Mary Fletcher		E. H. Buttles	10,379	1,629	1,225	\$100	0	0	1	7/1	1-2	319	121
Medical College of Virginia, Hospital Division *		F. L. Apperly	10,767	3,425	3,379	\$50	1	0	0	7/1	1	701	241
Charleston General		W. Putschar	7,462	2,421	1,696	\$25	1	0	0	7/1	1-3	214	91
State of Wisconsin		W. D. Stovall	12,263	3,502	3,502	\$25	1	0	0	7/1	3	353	227
Columbia Hospital *		G. H. Hansmann	5,293	1,452	948	\$25	2	0	0	7/1	1-3	112	63
St. Joseph's Hospital *	Milwaukee	J. C. Grill	5,159	1,733	1,710	\$100	1	0	0	7/1	1	326	109
Milwaukee County Hospital *	Wauwatosa, Wis.	J. C. Grill	20,179	1,933	1,993	\$50	1	2	0	7/1	1+	1,180	429
Queen's Hospital *	Honolulu, Hawaii	N. P. Larsen	10,301	2,589	2,320	\$200	1	0	0	9/1	1-3	410	255

21. PEDIATRICS

Revision of list is now taking place in collaboration with the American Board of Pediatrics

		Chief of Service	Inpatients Treated	Per Cent Fro *	Outpatient Visits	Beginning Salary	Residents	Assistant Residents	Fellow- ships	Service Begins	Length of Service (Years)	Deaths	Autopsies
Children's Hospital	Birmingham, Ala.	A. A. Walker	1,144	61	7,070	\$25	1	1	0	7/1	1	32	9
Hillman Hospital *	Birmingham, Ala.	A. A. Walker	801	100	5,106	\$50	1	0	0	7/1	1	96	59
California Babies' and Children's Hosp.	Los Angeles	R. P. Deakers	399	27	10,270	\$100	1	0	0	7/1	1	3	2
Children's Hospital	Los Angeles	V. E. Stork	2,532	57	47,352	\$10	1	8	0	Quart.	1	159	111
Los Angeles County Hospital *	Los Angeles	O. Reiss	2,550	109	4,026	\$10	2	0	0	4/1&10/1	2	174	92
White Memorial Hospital *	Los Angeles	M. B. Brooks	174	3	7,567	\$25	1	0	0	7/1	1-3	6	4
Children's Hospital of the East Bay	Oakland, Calif.	C. Sweet	2,101	...	13,962	\$25	1	1	0	7/1	1	29	23
Hospital for Children *	San Francisco	C. F. Gelston	453	4	2,893	\$25	0	1	0	7/1	1	23	23
San Francisco Hospital *	San Francisco	A. U. Christle and R. P. Seitz	915	100	...	\$50	1	0	0	7/1	1	...	...
Stanford University Hospitals *	San Francisco	H. K. Faber	573	2	15,816	\$25	1	2	0	7/1	1-2	10	8

Numerical and other references will be found on page 784.

21. PEDIATRICS—(Continued)

Chief of Service			Inpatients Treated	Per Cent Free	Outpatient Visits	Beginning Salary	Residents	Assistant- Residents	Fellow- ships	Service Begin	Length of Service (Years)	Deaths	Autopsies
University of California Hospital * ¹	San Francisco.....	F. S. Smyth.....	584	58	13,093	\$25	1	2	0	7/1	1+	30	27
Children's Hospital * ¹	Denver.....	F. B. Stephenson.....	2,861	17	.....	\$50	1	4	0	7/1	1-2	78	58
Denver General Hospital *.....	Denver.....	W. Jones.....	1,065	100	.....	\$50	1	0	0	7/1	1	71	40
New Haven Hospital *.....	New Haven, Conn.....	G. Powers.....	1,771	37	14,007	\$1	3	0	0	7/1	1+	60	48
Children's Hospital * ¹	Washington, D. C.....	J. S. Wall.....	6,904	85	63,823	\$20	12	2	0	1/1&7/1	1	207	135
Freedmen's Hospital * ¹	Washington, D. C.....	A. deG. Smith.....	473	85	3,695	\$1	0	1	0	7/1&10/1	1-2	35	13
Gallinger Municipal Hospital * ¹	Washington, D. C.....	W. M. Yater.....	999	99	3,617	\$25	1	1	0	7/1	1	55	41
Grady Hospital *.....	Atlanta, Ga.....	M. H. Roberts.....	1,243	100	20,203	\$40	2	0	0	7/1	1+	118	57
Henrietta Eggleston Hosp. for Children * ¹	Atlanta, Ga.....	M. H. Roberts.....	1,035	86	.....	\$40	2	0	0	1/1&7/1	1	71	36
University Hospital * ¹	Augusta, Ga.....	C. M. Burpee.....	855	29	2,263	\$40	1	1	0	7/1	1	92	32
Children's Memorial Hospital * ¹	Chicago.....	J. Brennemann.....	3,913	65	56,866	\$50	4	13	0	1/1&7/1	1	119	86
Cook County Hospital * ¹	Chicago.....	M. L. Blatt.....	10,097	100	14,288	\$25	8	0	1	1/1&7/1	1-3	407	347
Michael Reese Hospital *.....	Chicago.....	J. Gerstley.....	1,493	43	8,304	\$100	2	0	0	7/1	1	131	91
Presbyterian Hospital *.....	Chicago.....	C. Gruke.....	980	13	.....	\$50	1	0	0	7/1	1	24	18
Provident Hospital * ¹	Chicago.....	E. W. Beasley.....	962	62	7,907	\$50	1	0	2	9/1	1-3	51	37
Research and Educational Hospital *.....	Chicago.....	J. Hess.....	260	100	7,417	\$50	2	0	0	7/1&9/1	1-3	20	13
St. Vincent's Infant and Maternity Hosp. Chicago.....	Chicago.....	M. L. Blatt.....	842	100	.....	\$50	1	0	0	7/1	1	12	12
University of Chicago Clinics * ¹	Chicago.....	F. W. Schlutz.....	1,136	36	17,137	None	1	8	1	1/1&7/1	1-3	23	24
Indianapolis City Hospital * ¹	Indianapolis.....	J. C. Carter.....	610	95	8,129	\$41	1	0	0	7/1	1	102	61
Indiana University Medical Center * ¹	Indianapolis.....	M. Winters.....	1,403	80	4,284	\$41	1	1	0	7/1	1-2	167	61
University Hospitals * ¹	Iowa City.....	P. C. Jeans.....	958	87	2,025	\$21	1	2	0	7/1	1-6	61	40
University of Kansas Hospitals * ¹	Kansas City, Kan.....	F. C. Neff.....	771	56	2,033	\$50	1	0	0	7/1	1	41	33
Louisville City Hospital *.....	Louisville, Ky.....	P. F. Barbour.....	1,682	98	10,035	\$14	1	3	0	7/1	1-3	88	31
Charity Hospital *.....	New Orleans.....	E. A. Socola and R. A. Strong.....	2,282	100	18,573	\$25	3	3	0	7/1	1-3	229	103
Touro Infirmary * ¹	New Orleans.....	M. Loeber.....	497	35	10,305	\$25	1	0	0	7/1	1	33	20
Baltimore City Hospitals *.....	Baltimore.....	T. C. Goodwin.....	343	92	.....	\$12	1	1	0	7/1	1	42	22
Johns Hopkins Hospital *.....	Baltimore.....	E. A. Park.....	1,065	45	37,917	None	1	3	0	7/1&9/1	1-5	90	77
Union Memorial Hospital * ¹	Baltimore.....	D. C. W. Smith.....	332	15	2,871	\$30	1	1	0	7/1	1-2	8	8
Boston City Hospital * ¹	Boston.....	M. J. English.....	5,075	89	13,349	\$33	1	0	0	Varies	1+	211	95
Boston Floating Hospital *.....	Boston.....	E. W. Barron.....	1,019	95	12,783	\$10	1	3	0	Varies	1	19	15
Children's Hospital.....	Boston.....	K. D. Blackfan.....	876	53	27,131	None	6	0	0	1/1,5/1,9/1	1 1/2	28	19
Massachusetts General Hospital * ¹	Boston.....	H. H. Higgins.....	408	48	6,455	\$42	1	0	0	10/1	2	33	22
University Hospital * ¹	Ann Arbor, Mich.....	D. M. Cowie.....	1,441	74	8,256	\$25	1	3	0	7/1	1-3	57	26
Children's Hospital * ¹	Detroit.....	T. B. Cooley.....	3,995	85	31,505	\$25	2	14	0	7/1	1-2	313	197
Henry Ford Hospital *.....	Detroit.....	J. A. Johnston.....	1,011	28	9,947	\$130 ^c	3	0	0	7/1	1-5	37	24
Minneapolis General Hospital * ¹	Minneapolis.....	A. V. Stoesser.....	1,640	86	11,852	\$25	1	0	3	7/1	1-3	89	66
University Hospitals * ¹	Minneapolis.....	L. McQuarrie.....	2,012	75	6,357	\$50	1	0	1	1/1&7/1	3	125	91
Mayo Foundation.....	Rochester, Minn.....	(See page 784)											
Children's Mercy Hospital * ¹	Kansas City, Mo.....	C. J. Eldridge.....	1,934	100	16,362	\$25	2	0	0	7/1	1	55	61
Wheatley-Provident Hospital *.....	Kansas City, Mo.....	F. Hogue.....	158	22	.....	\$75	1	0	0	7/1	2-4	6	1
Homer G. Phillips Hospital *.....	St. Louis.....	W. Rupp.....	2,075	100	2,709	\$75	1	1	0	7/1	1-3	101	50
St. Louis Children's Hospital * ¹	St. Louis.....	A. F. Hartmann.....	3,459	59	25,412	\$25	1	8	0	7/1	1-3	114	80
St. Louis City Hospital *.....	St. Louis.....	J. J. Jaudon.....	916	109	4,569	\$30	1	0	0	7/1	1	62	33
St. Mary's Group of Hospitals *.....	St. Louis.....	J. Zahorsky.....	1,348	39	10,110	\$25	0	2	7/1	3	37	21	
Jersey City Hospital *.....	Jersey City, N. J.....	H. L. K. Shaw.....	697	90	2,166	\$100	1	0	0	7/1	1	70	14
Albany Hospital * ¹	Albany, N. Y.....	T. B. Givan.....	446	3	1,253	\$25	1	1	0	7/1	1	84	61
Cumberland Hospital *.....	Brooklyn.....	B. Kramer.....	1,615	100	9,192	\$100	1	1	0	7/1	1	52	33
Jewish Hospital * ¹	Brooklyn.....	G. Brockway and L. Krahulik.....	603	31	10,116	\$25	1	2	0	7/1	1	52	33
Kings County Hospital *.....	Brooklyn.....	C. A. Weymuller.....	2,973	100	7,047	\$15	2	2	0	7/1	2	174	101
Long Island College Hospital * ¹	Brooklyn.....	C. A. Weymuller.....	441	44	14,135	\$22	1	2	0	7/1	2	65	32
Norwegian Lutheran Deaconesses' Home and Hospital * ¹	Brooklyn.....	C. Fischer.....	253	1	2,322	None	1	0	0	7/1	2	32	22
Children's Hospital * ¹	Buffalo.....	H. R. Lohnes.....	4,787	48	.....	\$50	1	1	0	7/1	1	139	74
Edward J. Meyer Memorial Hospital (Buffalo City Hospital) * ¹	Buffalo.....	F. J. Gustina.....	123	85	3,228	\$59	1	2	0	7/1	3-4	19	8
Queens General Hospital * ¹	Jamaica, N. Y.....	H. A. Reisman.....	2,457	100	5,964	\$15	1	2	0	7/1	1	118	65
Babies Hospital.....	New York City.....	R. McIntosh.....	2,219	43	39,916	None	1	11	0	7/1	1	100	41
Bellevue Hospital * ¹	New York City.....	C. H. Smith.....	2,184	100	.....	Varies 14 ^c	0	0	0	Quart.	3	.....	31
Flower-Fifth Avenue Hospital *.....	New York City.....	R. A. Benson.....	1,456	5	3,137	\$50	1	0	0	7/1	1	54	40
Harlem Hospital * ¹	New York City.....	M. Gleich.....	1,370	100	15,627	\$15	1	0	0	7/1	1	61	15
Lincoln Hospital *.....	New York City.....	A. T. Martin.....	3,989	100	7,793	None	1	0	0	7/1	1	61	23
Metropolitan Hospital * ¹	New York City.....	R. A. Benson.....	1,211	.....	8,150	\$100	1	1	0	7/1	1+	60	23
Morrisania City Hospital *.....	New York City.....	L. H. Barenberg.....	668	100	4,636	\$15	1	1	0	1/1&7/1	1	54	23
Mount Sinai Hospital * ^{1,10}	New York City.....	.....	.....	55	.....	\$50	1	1	0	1/1&7/1	1	.....	41
New York City Hospital *.....	New York City.....	C. S. Boyd.....	728	100	4,930	\$100	1	0	0	7/1	1	43	31
New York Foundling Hospital * ¹⁷	New York City.....	.....	1,124	1	8,720	\$25	7	0	0	1/1&7/1	1	24	21
New York Hospital *.....	New York City.....	S. Z. Levine.....	928	5	3,680	\$25	1	5	0	7/1	1-5	89	65
New York Post-Graduate Medical School and Hospital *.....	New York City.....	A. G. De Sanctis.....	1,233	16	24,804	\$90	1	1	0	1/1&7/1	1	27	15
St. Luke's Hospital * ¹	New York City.....	F. E. Johnson.....	520	41	6,524	\$25	1	1	0	1/1&7/1	1-2	21	15
Strong Memorial and Rochester Municipal Hospitals *.....	Rochester, N. Y.....	S. W. Clausen.....	1,311	62	16,252	\$42	2	3	2	7/1	1-4	61	46
Sea View Hospital * ¹	Staten Island, N. Y.....	B. Schick.....	399	.....	.....	\$100	4	0	0	1/1&7/1	1	22	9
Syracuse Memorial Hospital *.....	Syracuse.....	B. C. Doust.....	1,255	30	.....	None	1	0	0	7/1	1	28	13
Grasslands Hospital * ¹	Valhalla, N. Y.....	F. D. Barnes.....	615	91	1,982	\$75	1	1	0	1/1&7/1	1-2	15	13
Duke Hospital * ¹	Durham, N. C.....	W. C. Davison.....	696	63	6,451	\$42	1	1	0	7/1	3-4	55	25
Watts Hospital *.....	Durham, N. C.....	A. H. London.....	634	24	615	\$50	1	0	0	7/1	1	18	5
Children's Hospital.....	Akron, O.....	N. E. Winters.....	1,164	.....	11,296	\$75	1	0	0	7/1	1	59	27
Children's Hospital * ¹	Cincinnati.....	A. G. Mitchell.....	4,380	70	28,964	\$25	7	7	0	7/1	2	105	49
Cincinnati General Hospital * ¹	Cincinnati.....	A. G. Mitchell.....	1,138	87	8,691	\$1	6	8	0	7/1	1-2	115	46
University Hospitals * ¹	Cleveland.....	H. J. Gerstenberger.....	1,048	28	26,516	\$25	1	2	0	7/1	2	69	46
Children's Hospital * ¹	Columbus, O.....	E. H. Baxter.....	2,612	98	52,594	\$40	1	3	0	7/1	1-2	107	51
University of Oregon Medical School Hospitals and Clinics *.....	Portland.....	J. B. Bilderback.....	2,561	100	9,289	\$40	1	0	0	7/1	1	73	52
Children's Hospital * ¹	Philadelphia.....	J. Stokes, Jr.....	1,845	51	45,167	None	3	10	0	7/1	1	62	41
Children's Hospital of the Mary J. Drexel Home *.....	Philadelphia.....	J. A. Babbitt.....	828	24	13,955	\$100	1	0	0	7/1	1	11	6
Hahnemann Hospital *.....	Philadelphia.....	C. S. Raue.....	443	52	5,623	\$5	1	0	0	9/1	1	.....	.....
Hospital of the University of Pennsylvania *.....	Philadelphia.....	J. Stokes.....	391	27	3,782	None	1	0	0	7/1	1	19	11
Jewish Hospital * ¹	Philadelphia.....	.....	202	27	1,221	None	1	0	0	6/15	1	10	7
Philadelphia General Hospital * ¹	Philadelphia.....	.....	2,143	95	4,850	\$100	1	0	0	7/1	1-2	.....	25
St. Christopher's Hospital for Children *.....	Philadelphia.....	F. Knauss.....	1,941	67	63,175	\$50	5	0	0	7/1	1	41	25
Temple University Hospital *.....	Philadelphia.....	W. E. Nelson.....	1,234	43	5,893	\$40	2	0	0	7/1	3	29	27
Children's Hospital.....	Pittsburgh.....	H. T. Price.....	1,536	68	6,871	\$25	1	3	0	9/1	1	72	24
Roper Hospital *.....	Charleston, S. C.....	M. W. Beach.....	501	74	10,143	\$10	0	1	0	7/1	1	117	17
T. C. Thompson Children's Hospital *.....	Chattanooga, Tenn.....	H. D. Long.....	1,192	73	17,234	\$50	1	1	0	7/1	1	.....	.....

21. PEDIATRICS—(Continued)

		Chief of Service	Inpatients Treated ^a	Per Cent Fec ^d	Outpatient Visits	Beginning Salary	Residents	Assistant Residents	Fellow- ships	Service Begin	Length of Service (years)	Deaths ^e	Autopsies
John Gaston Hospital*	Memphis, Tenn.	E. C. Mitchell	1,452	95	7,116	\$65	1	0	0	7/1	1	93	26
George W. Hubbard Hospital of Me- harry Medical College*	Nashville, Tenn.	J. W. Jones	454	60	3,306	\$75	1	0	0	7/1	2	29	10
Vanderbilt University Hospital*	Nashville, Tenn.	H. Casparis	1,337	...	15,022	\$35	1	2	4	7/1	1	106	70
Bradford Memorial Hosp. for Babies ¹	Dallas, Tex.	H. L. Moore	938	55	5,454	\$25	1	1	0	7/1	1	102	19
John Sealy Hospital*	Galveston, Tex.	B. Reading	367	73	7,099	\$50	1	0	0	7/1	1	47	23
University of Virginia Hospital*	Charlottesville	L. T. Royster	1,173	27	4,612	\$50	1	1	0	7/1	1	62	23
Medical College of Virginia, Hospital Division* ¹	...	L. E. Sutton	1,353	5	3,496	\$25	0	2	0	7/1	1	157	53
State of Wiscon	...	J. E. Gonc	684	84	2,210	\$25	1	0	0	7/1	3	37	24
Milwaukee Ch	...	E. Epstein	1,921	63	17,617	\$30	5	0	0	1/1&7/1	1	79	46
Milwaukee County	...	F. E. Drew	2,882	98	8,829	\$50	2	0	0	7/1	1-3	46	30

22. PHYSICAL THERAPY

Stanford University Hospitals* ¹	San Francisco	W. Northway	2,751	2	5,073	\$25	1	0	0	7/1	1	...	...
Michael Reese Hospital*	Chicago	C. O. Molander	450	43	6,861	...	1	0	0	7/1	1	...	...
Mayo Foundation	Rochester, Minn.	(See page 784)											

23. PLASTIC SURGERY

Mayo Foundation	Rochester, Minn.	(See page 784)											
Kings County Hospital*	Brooklyn	W. Conkley	...	100	1,595	\$15	1	1	0	7/1	1	22	0
Presbyterian Hospital* ¹	New York City	A. O. Whipple	...	31	...	None	2	0	0	7/1	1	...	...
Graduate Hospital of the University of Pennsylvania* ²⁴	Philadelphia	R. H. Ivy	182	61	600	None	1	0	0	7/1	1	2	1

24. PSYCHIATRY

Revision of list is now taking place in collaboration with the American Board of Psychiatry and Neurology

Compton Sanitarium	Compton, Calif.	G. Myers	85	.....	\$100	1	0	0	Varies	1+	8	1
Stanford University Hospital* ^{1,12}	San Francisco	G. S. Johnson	420	2	11,276	\$25	1	2	0	7/1	1-2	4
University of California Hospital*	San Francisco	W. J. Kerr	98	58	2,265	\$25	0	1	0	7/1	1+	...
Mendocino State Hospital ¹	Talmage, Calif.	W. Rapaport	2,783	86	24	\$10	6	0	0	Varies	1+	113
Colorado Psychopathic Hospital	Denver	F. G. Ebaugh	890	70	5,889	\$100	0	0	6	9/1	3	10
Neuro-Psychiatric Institute of the Hartford Retreat	Hartford, Conn.	C. C. Burlingame	842	6	.....	\$200	4	0	6	Varies	1½	12
Connecticut Sta		R. L. Leak	1,080	37	.....	\$50	1	0	0	Varies	1	315
New Haven Ho		E. Kahn	300	37	3,033	.....	1	7	0	7/1	1+	5
Delaware State Hospital ¹	Farmhurst	M. A. Tarumianz	1,490	85	3,800	\$50	2	0	0	Varies	1-2	103
Gallinger Municipal Hospital*	Washington, D. C.	J. L. Gilbert	3,231	99	.....	\$25	0	1	0	7/1	1	111
St. Elizabeths Hospital ¹	Washington, D. C.	R. H. Guthrie	7,216	99	.....	\$167	10	0	0	7/1&10/1	1	35
Cook County Hospital*	Chicago	F. J. Gerty	6,141	100	.....	\$75	3	0	2	1/1&7/1	1-3	131
Michael Reese Hospital* ¹²	Chicago	M. Gitelson	21	43	2,322	\$50	2	0	0	1/1&7/1	1	0
Research and Educational Hospital* ¹	Chicago	H. D. Singer	146	100	.....	\$50	3	0	2	7/1	1-3	2
University of Chicago Clinics* ¹	Chicago	D. Sligh	159	36	3,504	None	1	0	0	7/1	1-3	...
Elgin State Hospit ¹	Chicago	E. Liebert	6,667	100	1,885	\$52	3	0	0	Varies	1	369
Central State Hosp		M. A. Bahr	2,670	98	.....	\$157	4	0	0	Varies	1+	167
Indianapolis City		L. D. Carter	542	95	1,888	\$41	1	0	0	7/1	1-2	20
Logansport State Hospital	Logansport, Ind.	O. L. Williams	2,247	94	.....	\$100	2	3	0	Varies	1-3	158
Iowa State Psychopathic Hospital ¹	Iowa City	A. H. Woods	353	84	1,566	\$64	2	2	1	7/1	1	1
Oswatome State Hospital ¹	Oswatome, Kan.	T. L. Foster	2,043	89	912	\$85	3	0	0	1/1&7/1	1-2	136
Menninger Sanitarium ¹	Topeka, Kan.	W. C. Menninger	155	...	290	\$120	4	0	0	1/1&7/1	1	2
U. S. Public Health Service Hospital ¹	Lexington, Ky.	R. H. Felix	1,935	98	.....	\$150	7	0	0	7/1	1-2	15
Johns Hopkins Hospital*	Baltimore	A. Meyer	327	45	4,949	None	1	2	0	7/1&9/1	1-6	1
Spring Grove State Hospital ¹	Catonsville, Md.	S. W. Weltmer	2,516	99	.....	\$100	3	0	0	Varies	1-3	126
Springfield State H		K. B. Jones	3,387	100	482	\$100	4	0	0	Varies	1-2	208
Sheppard and Enoc		R. McC. Chapman	689	6	.....	\$100	9	0	0	1/1&7/1	1-3	9
McLean Hospital ¹		K. J. Tillotson	417	6	.....	\$75	7	0	0	Varies	1-2	9
Boston Psychopathic Hospital ¹	Boston	C. M. Campbell	2,114	75	2,757	\$75	8	0	0	9/1	1+	17
Boston State Hospital	Boston	H. F. Norton	2,262	96	.....	\$45	1	0	0	Varies	1	292
Massachusetts General Hospital*	Boston	S. Cobb	89	48	.....	\$12	1	1	0	1/1&7/1	1-2	...
Foxboro State Hospital ¹	Foxboro, Mass.	G. B. Pearson	1,393	...	535	\$45	1	0	0	7/1	1	111
Gardner State Hospital ¹	Gardner, Mass.	F. W. Moore	1,673	96	633	\$45	1	0	0	6/1	1	67
Danvers State Hospital ¹	Hathorne, Mass.	L. Maletz	3,200	90	2,000	\$45	2	0	0	Varies	1	232
Medfield State Hospital	Medfield, Mass.	E. K. Holt	2,093	99	.....	\$150	1	0	0	Varies	1-2	93
Northampton State Hospital ¹	Northampton, Mass.	G. C. Randall	2,603	82	974	\$150	1	0	0	Varies	1+	189
Grafton State Hospital ¹	North Grafton, Mass.	H. L. Paine	1,634	...	1,047	None	1	0	0	7/1	1	69
Taunton State Hospital	Taunton, Mass.	R. G. Osterheld	2,267	84	2,964	\$150	5	0	0	7/1	1-2	229
Westboro State Hospital	Westboro, Mass.	W. E. Lang	2,187	87	1,179	\$150	3	0	0	7/1	1-2	123
Worcester State Hospital ¹	Worcester, Mass.	W. Malamud	.....	100	.....	None	7	0	0	7/1	1	192
University Hospital* ¹	Ann Arbor, Mich.	R. Waggoner	484	74	3,172	\$25	1	1	0	7/1	1-3	2
City of Detroit Receiving Hospital* ¹⁰	Detroit	J. M. Stanton	6,235	100	1,505	\$83	1	1	0	7/1	1+	190
Henry Ford Hospital*	Detroit	T. J. Heldt	571	23	3,263	\$120	1	0	0	9/1	3	6
Eloise Hospital and Infirmary*	Eloise, Mich.	M. H. Hoffmann	4,031	95	2,532	\$150	7	0	0	7/1	2	230
Pontiac State Hospital	Pontiac, Mich.	P. V. Wagley	.....	...	.....	\$200	2	2	0	Varies	3	...
Traverse City State Hospital	Traverse City, Mich.	B. P. Shets	2,961	...	.....	\$200	4	0	0	Varies	1-3	173
Ypsilanti State Hospital	Ypsilanti, Mich.	O. R. Yoder	3,283	90	625	\$165	2	0	0	Varies	1-3	150
Minneapolis Gen		J. C. Michael	1,823	86	1,778	\$25	0	0	1	7/1	1-3	109
University Hospi		J. C. McKinley	235	75	.....	\$50	1	0	1	1/1&7/1	3	4
Mayo Foundatio		(See page 784)										
St. Peter State		G. H. Freeman	2,763	75	.....	\$75	1	0	0	7/1	1-2	220
State Hospital No. 1	Fulton, Mo.	J. R. Bunch	3,090	96	.....	\$75	2	0	0	7/1	1-3	179
State Hospital No. 2	St. Joseph, Mo.	R. Hanks	3,333	...	.....	\$75	6	0	0	7/1	1-3	252
City Sanitarium	St. Louis	F. M. Grogan	4,033	81	.....	\$150	8	0	0	7/1	1	181
St. Louis City	St. Louis	J. Levy	1,813	100	9,233	\$50	1	3	0	7/1	1-3	215
Hastings State		J. C. Nielsen	1,094	90	1,121	\$125	3	0	0	Varies	1-2	115
Norfolk State		G. E. Charlton	1,163	90	.....	\$140	4	0	0	Varies	1+	37
Bishop Clarkson Memorial Hospital*	Omaha	A. E. Bennett	341	3	100	\$50	0	1	0	7/1	1	11
New Hampshire State Hospital ¹	Concord, N. H.	C. H. Dolloff	2,501	86	1,005	\$150	1	2	0	Varies	1+	224
New Jersey State Hospital ¹	Greystone Park	M. A. Curry	7,250	17	.....	\$100	12	0	0	Varies	1+	476
New Jersey State Hospital ¹	Marlboro	J. B. Gordon	3,143	26	951	\$50	1	0	0	7/1	1	292
Albany Hospital* ^{1,12}	Albany, N. Y.	D. E. Cameron	771	3	1,563	\$25	1	1	0	7/1	1	51
Binghamton State Hospital ¹	Binghamton, N. Y.	W. C. Garvin	3,592	92	395	\$150	3	0	0	Varies	1+	193
Buffalo State Hospital ¹	Buffalo	C. Fletcher	3,033	87	2,157	\$200	3	0	0	Varies	1+	213
Edward J. Meyer Memorial Hospital (Buffalo City Hospital)* ^{1,12}	Buffalo	S. W. Hartwell	1,497	85	3,765	\$50	0	1	0	7/1	2-4	159

24. PSYCHIATRY—(Continued)

		Chief of Service	Inpatients Treated ^a	Per Cent Free ^a	Outpatient Visits	Beginning Salary	Residents	Assistant Residents	Fellow- ships	Service Begins	Length of Service (Years)	Deaths ^a	Autopsies
Central Islip State Hospital ¹	Central Islip, N. Y.....	D. Corcoran	7,255	91	3,031	\$150	10	0	0	1/1&7/1	1-3	413	157
Hastings Hillside Hospital	Hastings on Hudson, N. Y.....	L. Wender	131	30	1,393	\$100	1	0	0	10/1	1	...	...
Gowanda State Homeopathic Hospital.....	Helmuth, N. Y.....	E. V. Gray.....	2,947	90	.....	\$150	7	0	0	Varies	1+	176	83
Kings Park State Hospital ¹	Kings Park, N. Y.....	C. S. Parker.....	5,873	88	2,338	\$150	10	0	0	Varies	1+	233	97
Marcy State Hospital.....	Marcy, N. Y.....	W. W. Wright.....	3,016	94	.....	\$150	3	0	0	Varies	1+	233	41
Middletown State Homeopathic Hosp. ¹	Middletown, N. Y.....	R. Woodman.....	3,618	87	1,029	\$150	4	0	0	7/1	1	185	83
Bellvue Hospital ¹	New York City.....	K. Bowman.....	28,118	100	.....	Varies	13 ^a	0	0	1/1&7/1	2	...	...
New York Hospital ¹	New York City.....	O. Diethelm.....	292	5	1,067	\$50	2	7	0	7/1	1-4	3	2
New York State Psychiatric Institute and Hospital ¹	New York City.....	N. D. C. Lewis.....	393	..	1,783	\$25	8	0	0	1/1&7/1	1-2	0	0
U. S. Marine Hospital.....	New York City.....	S. D. Vestermark.....	833	100	130	\$150	0	2	0	7/1	1	6	2
St. Lawrence State Hospital ¹	Ogdensburg, N. Y.....	J. A. Pritchard.....	2,447	91	1,106	\$150	6	0	0	1/1&7/1	1+	182	93
Hudson River State Hospital.....	Poughkeepsie, N. Y.....	R. P. Folsom.....	5,171	89	7,724	\$150	1	0	0	Varies	1+	371	111
Rochester State Hospital.....	Rochester, N. Y.....	J. L. Van De Mark.....	3,680	88	2,112	\$150	3	0	0	Varies	1+	242	84
Strong Memorial and Rochester Muni- cipal Hospitals ¹	Rochester, N. Y.....	R. C. A. Jaenike.....	641	62	1,121	\$125 ^a	1	0	0	7/1	1+	...	...
Utica State Hospital ¹	Utica, N. Y.....	W. E. Merriman.....	2,204	64	1,859	\$150	4	0	0	Varies	1+	203	50
Grasslands Hospital ¹	Valhalla, N. Y.....	T. P. Brennan.....	1,313	91	705	Varies	2	3	0	1/1&7/1	1-3	41	25
New York Hospital-Westchester Division	White Plains, N. Y.....	C. O. Cheney.....	695	5	.....	\$125	2	4	0	1/1&7/1	1-3	10	4
Duke Hospital ¹	Durham, N. C.....	R. S. Crispell.....	1,252	63	1,276	\$42	1	0	0	7/1	1-4	...	...
Cincinnati General Hospital ¹	Cincinnati.....	E. A. North.....	1,227	87	2,704	\$4	1	2	0	7/1	1-2	24	10
Longview State Hospital.....	Cincinnati.....	E. A. Baber.....	2,609	..	4,654	\$75	2	0	0	7/1	1-2	163	72
City Hospital ¹	Cleveland.....	.....	831	92	1,833	\$42	1	2	0	7/1	1	30	20
Columbus State Hospital ¹	Columbus, O.....	N. Michael.....	2,588	..	750	\$50	1	0	0	7/1	1-3	219	93
Toledo State Hospital.....	Toledo, O.....	O. O. Fordyce.....	3,452	66	1,493	\$100	2	0	0	7/1	1	225	61
Harding Sanitarium ¹	Worthington, O.....	G. T. Harding.....	276	..	.....	\$150	1	0	0	9/1	1-2	5	0
Danville State Hospital.....	Danville, Pa.....	L. R. Chamberlain.....	.....	96	3,053	\$100	1	0	0	Varies	1+	109	22
Harrisburg State Hospital ¹	Harrisburg, Pa.....	H. K. Petry.....	2,302	88	327	\$125	2	0	0	Varies	1-3	118	40
Norristown State Hospital.....	Norristown, Pa.....	A. P. Noyes.....	3,902	67	801	\$125	8	0	0	Varies	12+	188	82
Friends Hospital.....	Philadelphia.....	T. L. Dehne.....	245	..	.....	\$100	2	0	0	7/1	1-2	10	3
Institute of the Pennsylvania Hospital ¹	Philadelphia.....	L. H. Smith.....	646	..	3,000	Varies	0	3	3	7/1	1	2	1
Pennsylvania Hospital, Department for Mental and Nervous Diseases ¹	Philadelphia.....	L. H. Smith.....	407	3	2,262	Varies	0	0	4	1/1&7/1	1	11	3
Philadelphia General Hospital ^{1,12}	Philadelphia.....	O. S. English.....	4,347	95	.....	\$150	1	0	0	7/1	1-2	...	...
Temple University Hospital ¹	Philadelphia.....	C. H. Henninger.....	.....	43	.....	\$40	1	0	0	7/1	3	...	...
St. Francis Hospital ¹	Pittsburgh.....	C. H. Israel.....	4,077	80	438	\$50	3	0	0	9/1	3	112	20
Warren State Hospital ¹	Warren, Pa.....	C. P. Fitzpatrick.....	2,400	..	512	\$125	5	0	0	7/1	1-3	210	43
State Hospital for Mental Diseases ¹	Howard, R. I.....	A. H. Ruggles.....	3,299	93	1,162	\$75	5	0	0	1/1&7/1	1-2	189	65
Butler Hospital.....	Providence, R. I.....	H. E. Klene.....	359	..	.....	\$50	5	0	0	7/1	1-2	18	2
Charles V. Chapin Hospital.....	Providence, R. I.....	L. R. Brown.....	641	46	2,184	\$75	1	0	0	1/1	1	32	19
Galveston State Psychopathic Hospital ¹	Galveston, Tex.....	T. H. Harris.....	535	20	.....	\$100	5	1	0	Varies	3	2	1
John Sealy Hospital ^{1,12}	Galveston, Tex.....	D. C. Wilson.....	737	73	1,846	\$50	1	1	0	7/1	1	25	9
University of Virginia Hospital ¹	Charlottesville.....	W. N. Keller.....	369	27	1,294	\$	1	2	0	7/1	1	7	3
Western State Hospital ¹	Ft. Steilacoom, Wash.....	C. W. Miller, Jr.....	3,249	..	.....	\$100	3	0	0	7/1	1-3	254	151
Eastern State Hospital ¹	Medical Lake, Wash.....	J. W. Doughty.....	2,176	..	62	\$100	3	0	0	7/1	1	121	72
Northern State Hospital.....	Sedro-Woolley, Wash.....	W. F. Lorenz.....	2,350	80	.....	\$100	2	0	0	7/1	1	151	106
State of Wisconsin General Hosp. ^{1,12}	Madison.....	.....	1,082	84	402	\$25	1	1	0	7/1	1	22	14
Milwaukee County Hospital for Mental Diseases ¹	Wauwatosa, Wis.....	M. Kasak.....	1,517	..	870	\$50	4	0	0	1/1&7/1	3	42	18
Milwaukee Sanitarium ¹²	Wauwatosa, Wis.....	L. H. Ziegler.....	306	..	.....	\$75	1	0	0	7/1	1-3	9	1

25. RADIOLOGY

Revision of list is now taking place in collaboration with the American Board of Radiology

			Chief of Service	Röntgeno- graphic Ex- aminations	X-Ray Treatments	Radium Treatments	Beginning Salary	Residents	Assistant Residents	Fellow- ships	Service Begins	Length of Service (Years)	Deaths ^a	Autopsies
Los Angeles County Hospital ¹	Los Angeles.....	R. A. Carter.....	75,772 ^b	18,336	1,067	\$75	3	0	0	7/1	3	3,963	2,023	
St. Vincent's Hospital ¹	Los Angeles.....	K. S. Davis.....	5,773	837	.....	1	0	0	0	7/1	2	182	79
San Francisco Hospital ¹	San Francisco.....	L. Bryan and L. H. Garland	53,387	4,151	150	\$50	4	0	0	7/1	1	913	522	
Stanford University Hospital ¹	San Francisco.....	R. R. Newell.....	11,532	7,126	248	\$25	1	1	0	7/1	1-2	213	122	
University of California Hospital ¹	San Francisco.....	R. S. Stone.....	10,145	10,942	409	\$25	1	2	0	7/1	1+	162	123	
Colorado General Hospital ^{1,12}	Denver.....	E. A. Schmidt.....	6,637	2,851	29	\$100	1	0	0	7/1	2	231	187	
Hartford Hospital ¹.....	.....	D. J. Roberts.....	11,176	6,722	197	\$25	1	0	0	1/1&7/1	2-3	570	276
New Haven Hospital ¹.....	.....	H. Wilson.....	15,837	3,605	93	"	1	2	0	7/1	1+	441	315
Garfield Memorial .....	.....	E. A. Merritt.....	8,890	10,461	133	\$50	1	0	1	7/1	1	231	118
Georgetown University Hospital ¹	Washington, D. C.....	F. O. Coe.....	4,539	2,512	67	\$50	0	2	7/1	2	190	67		
Sibley Memorial Hospital ¹	Washington, D. C.....	J. F. Elward.....	3,073	112	30	\$65	1	0	0	7/1	1-3	237	119	
Veterans Administration Facility.....	Washington, D. C.....	W. P. Hynes.....	8,652	1,640	11	...	1	0	0	Varies	1+	167	100	
Walter Reed General Hospital ¹	Washington, D. C.....	R. H. Lowry.....	16,778	2,938	404	...	2	0	2	Varies	2-4	227	181	
Piedmont Hospital ¹	Atlanta, Ga.....	H. Rudisill, Jr.....	1,250	450	24	\$50	1	0	0	Varies	3	75	24	
Cook County Hospital ¹	Chicago.....	M. J. Hubeny.....	88,242	31,462	210	\$25	3	0	2	1/1&7/1	1-3	6,561	1,246	
Michael Reese Hospital ¹	Chicago.....	R. A. Arens.....	8,807 ^b	3,200	6,652	\$25	0	0	2	Varies	3	520	293	
Passavant Memorial Hospital ¹	Chicago.....	T. J. Case.....	5,440	2,456	930	\$75	0	0	2	1/1&7/1	3	140	110	
Presbyterian Hospital ¹	Chicago.....	F. H. Squire.....	15,957	4,556	103	\$50	2	0	0	1/1&7/1	2	270	155	
Provident Hospital ¹	Chicago.....	B. W. Anthony.....	3,962	840	37 ^b	\$50	1	0	0	7/1	1-3	172	74	
Research and Educational Hospital ¹	Chicago.....	A. Hartung.....	9,785	3,000	.....	\$50	2	0	0	7/1&9/1	1-3	203	178
St. Luke's Hospital ¹	Chicago.....	E. L. Jenkinson.....	11,621	5,700	.....	\$25	3	0	0	4/1&10/1	3-5	257	183
University of Chicago Clinics ¹	Chicago.....	P. C. Hodges.....	16,864	6,212	58	\$25	0	3	3	7/1	1	243	163	
Evansston Hospital ¹	Evansston, Ill.....	E. R. Crowder.....	13,527	229	.....	\$33	0	1	1	7/1	3	173	136
Veterans Administration Facility.....	Hines, Ill.....	A. E. Williams and C. G. Lyons	58,380	21,000	4,569	...	0	0	1	1/1	1-3	958	412	
Indiana University Medical Center ¹	Indianapolis.....	A. P. Echternacht.....	16,949	6,666	120	\$33	0	0	1	7/1	3	416	251	
Methodist Hospital ¹	Indianapolis.....	H. C. Ochsner.....	9,490	2,437	.....	\$50	1	1	0	7/1	1-3	614	164
University Hospital ¹	Iowa City.....	H. D. Kerr.....	25,490	17,886	83	\$21	1	2	0	7/1	1-4	511	296	
Charity Hospital ¹	New Orleans.....	J. B. Irwin.....	64,463	14,901	277	\$25	0	4	0	7/1	1-3	3,226	1,401	
Southern Baptist Hospital ¹	New Orleans.....	L. W. Magruder, Jr.....	5,475	2,862	110	\$100	1	0	0	7/1	1-3	229	46	
Touro Infirmary ¹	New Orleans.....	M. D. Teitelbaum.....	23,163	.....	.....	\$50	1	0	0	7/1	3	377	151
Johns Hopkins Hospital ¹.....	.....	J. W. Pierson.....	126,942	9,731	216	None	1	1	0	7/1&9/1	1-3	479	217
University Hospital ¹.....	.....	H. J. Walton.....	18,429	6,716	282	\$50	1	2	0	7/1	1-2	238	185
Beth Israel Hospital ¹.....	.....	S. A. Robins.....	11,396	3,262	52	\$60	1	0	0	7/1	1-3	203	102

25. RADIOLOGY—(Continued)

	Chief of Service	Röntgeno- graphic Ex- aminations	X-Ray Treatments	Radium Treatments	Beginning Salary	Residents	Assistant Residents	Fellow- ships	Service Begins	Length of Service (Years)	Deaths *	Autopsies
Boston City Hospital * ¹	Boston..... P. F. Butler.....	64,456	7,208	52	\$83	1	0	0	Varies	3	2,093	800
Children's Hospital.....	Boston..... G. M. Wyatt.....	14,100	745	...	...	1	0	0	7/1	1	234	181
Lahey Clinic.....	Boston..... H. F. Hare.....	50,000	6,000	50	\$100 ^c	1	0	1	6/1	1-3	...	...
Massachusetts General Hospital *	Boston..... G. W. Holmes.....	28,081	7,889	...	\$42	1	0	0	7/1	3	547	228
Massachusetts Memorial Hospitals * ¹	Boston..... G. Levene.....	9,116	2,679	49	\$42	1	0	0	1/1	3	173	118
New England Deaconess Hospital.....	Boston..... J. H. Marks.....	6,488	6,299	323	\$75	1	0	0	7/1	1-3	252	187
Peter Bent Brigham Hospital *	Boston..... M. C. Sosman.....	15,679	3,806	41	\$83	2	1	0	7/1	3	345	226
University Hospital * ¹	Ann Arbor, Mich..... F. J. Hodges.....	39,357	12,578	210	\$25	3	0	0	7/1	1-3	693	401
City of Detroit Receiving Hospital * ¹⁰	Detroit..... J. C. Kenning.....	34,056	960	...	\$83	1	1	0	7/1	1-2	1,691	655
Grace Hospital *	Detroit..... R. H. Stevens.....	11,143	4,400	13	\$50	1	1	0	9/1	8	521	241
Harper Hospital *	Detroit..... L. Reynolds.....	15,000	11,200	300	\$45	0	1	0	7/1	1-2	441	113
Henry Ford Hospital *	Detroit..... H. P. Daub.....	21,921	3,606	189	\$125 ^c	1	1	0	7/1	3	333	175
Hurley Hospital *	Flint, Mich..... M. W. Clift.....	6,083	2,843	41	\$42	0	0	1	7/1	3	518	187
University Hospitals * ¹	Minneapolis..... L. G. Rigler.....	31,089	11,993	511	\$50	0	0	3	7/1	4	450	328
Mayo Foundation.....	Rochester, Minn.....	(See page 784)										
Barnes Hospital *	St. Louis..... S. Moore.....	59,005	3,634	252	\$25	1	1	0	7/1	1-3	323	212
Homer G. Phillips Hospital *	St. Louis..... E. W. Spinzig.....	11,206	1,831	50	\$75	1	1	0	7/1	1-3	708	239
St. Louis City Hospital *	St. Louis..... L. Sante.....	48,175	2,948	172	\$50	1	2	0	7/1	1-3	1,206	671
Creighton Memorial St. Joseph's Hosp. *	Omaha..... J. F. Keely.....	2,311	2,686	33	\$25	2	0	0	1/1&7/1	3	312	94
University of Nebraska Hospital *	Omaha..... H. B. Hunt.....	4,349	2,979	122	\$50	1	0	1	7/1	1	167	136
Mary Hitchcock Memorial Hospital *	Hanover, N. H..... L. K. Sycamore.....	5,208	1,777	39	\$42	1	0	0	7/1	3	106	82
Jewish Hospital * ¹	Brooklyn..... M. G. Wasch.....	18,423	4,934	38	None	1	2	0	1/1&7/1	1½	512	233
Kings County Hospital *	Brooklyn..... R. Rendieh.....	66,485	23,328	\$15	2	1	0	0	7/1&9/1	2-3	5,261	1,001
Long Island College Hospital * ¹	Brooklyn..... A. L. L. Bell.....	12,131	3,840	84	\$22	1	1	0	7/1	3	336	139
Methodist Hospital *	Brooklyn..... G. W. Cramp.....	5,316	1,251	84	\$50	1	1	0	7/1	1	258	103
Edward J. Meyer Memorial Hospital (Buffalo City Hospital) *	Buffalo..... C. R. Orr.....	10,962	3,788	8	\$59	0	1	0	7/1	3	1,003	292
Queens General Hospital * ¹	Jamaica, N. Y..... I. S. Startz.....	20,538	9,774	197	\$15	2	0	0	7/1	2	761	480
New Rochelle Hospital *	New Rochelle, N. Y..... A. J. Chalko.....	7,374	4,116	17	\$50	1	1	0	7/1	2-3	178	74
Bellevue Hospital * ^{1,20}	New York City..... L. Friedman.....	193,726	12,415	1,319	\$15	6 ^c	0	0	1/1&7/1	1½	2,505	786
Beth Israel Hospital * ¹	New York City..... I. S. Hirsch.....	7,562	2,361	102	None	3	0	0	1/1, 7/1, 10/1	1	277	120
Bronx Hospital *	New York City..... W. Snow.....	6,221	1,529	25	\$50	1	0	0	7/1	1	271	83
Flower-Fifth Avenue Hospital *	New York City..... J. C. Howard.....	5,572	1,717	39	None	1	0	0	Varies	3	215	77
Lenox Hill Hospital *	New York City..... W. H. Stewart.....	14,001	2,655	18	\$50	1	0	0	7/1	2	264	131
Montefiore Hospital for Chronic Dis- eases * ^{1,20}	New York City..... A. J. Bendick.....	6,734	7,597	138	\$50	3	0	0	1/1&7/1	1	445	320
Morrisania City Hospital *	New York City..... S. F. Weltzner.....	21,997	9,270	174	\$15	1	0	0	1/1	1	909	277
Mount Sinai Hospital * ^{1,10}	New York City..... M. L. Sussman.....	23,152	8,618	44	\$50	2	2	0	1/1&7/1	2	782	350
New York City Hospital *	New York City..... G. J. Plehn.....	10,341	132	...	\$100	1	0	0	7/1	1	804	380
New York Hospital *	New York City..... J. R. Carty.....	35,529	6,803	...	\$25	1	2	0	7/1	1-3	481	276
New York Polyclinic Medical School and Hospital *	New York City..... E. E. Smith.....	15,045	1,619	6	None	1	0	0	7/1	2	187	53
New York Post-Graduate Medical School and Hospital *	New York City..... W. H. Meyer.....	8,780	6,527	1,374	\$40	1	2	0	1/1&7/1	1½	258	109
New York University College of Medi- cine Clinic.....	New York City..... I. S. Hirsch.....	3,500	...	...	None	0	0	1	1/1	1	...	...
Presbyterian Hospital * ¹	New York City..... R. Golden.....	36,206	17,280	207	\$42	1	2	0	9/1	3	538	262
Roosevelt Hospital *	New York City..... W. H. Boone.....	13,392	2,411	129	\$25	1	0	0	7/1	1-2	302	112
St. Luke's Hospital *	New York City..... E. J. Ryan.....	18,265	4,593	155	\$50	1	1	0	1/1	2	308	160
Welfare Hospital for Chronic Diseases *	New York City..... H. K. Taylor.....	3,065	...	...	\$100	1	0	0	7/1	1-4	148	57
Strong Memorial and Rochester Muni- cipal Hospitals *	Rochester, N. Y..... S. L. Warren.....	19,141	5,009	475	\$83 ^c	1	3	2	7/1	1-4	545	305
Sea View Hospital * ¹	Staten Island, N. Y..... E. Kraft.....	19,321	...	...	\$100	1	0	0	1/1&7/1	1	526	185
Grasslands Hospital *	Valhalla, N. Y..... A. G. Debbie.....	11,936	7,639	45	\$117	1	0	0	1/1&7/1	1-3	454	330
Duke Hospital *	Durham, N. C..... R. J. Reeves.....	23,621	8,893	1,043	\$42	1	2	0	7/1	1-4	358	193
Watts Hospital *	Durham, N. C..... W. V. Vaughan.....	7,108	3,503	67	...	1	0	0	7/1	3-5	123	34
Cincinnati General Hospital *	Cincinnati..... H. G. Reineke.....	26,919	7,964	557	...	1	3	0	7/1	1-2	1,126	781
Jewish Hospital *	Cincinnati..... S. Brown.....	5,071	1,141	39	\$45	1	0	0	7/1	1-2	202	64
City Hospital *	Cleveland..... H. Hauser.....	38,816	8,770	...	\$36	2	1	0	7/1	1	1,307	523
Cleveland Clinic Foundation Hospital.....	Cleveland..... B. H. Nichols.....	17,302	4,000	2,000	\$56	0	0	3	7/1	3	177	81
University Hospitals * ¹	Cleveland..... E. Freedman.....	22,319	6,222	218	\$25	0	2	1	7/1	2	575	348
State University and Crippled Children's Hospitals *	Oklahoma City..... J. E. Heatley.....	16,815	10,452	208	\$50	1	0	0	7/1	1	270	149
St. Vincent's Hospital *	Portland, Ore..... S. E. Rees.....	4,494	702	...	\$50	1	0	0	8/1	3	342	193
University of Oregon Medical School Hospitals and Clinics *	Portland..... D. L. Palmer.....	19,733	3,646	310	\$50	1	0	0	7/1	3	619	407
Abington Memorial Hospital *	Abington, Pa..... J. D. Zulick.....	2,300	1,567	...	\$75	1	0	0	7/1	1-4	218	126
Bryn Mawr Hospital *	Bryn Mawr, Pa..... R. S. Bromer.....	7,217	2,655	169	\$50	1	0	0	7/1	1-3	145	70
Graduate Hospital of the University of Pennsylvania *	Philadelphia..... A. Finkelstein.....	10,210	3,275	86	\$25	0	0	2	7/1	2	246	111
Hospital of the Protestant Episcopal Church *	Philadelphia..... R. Barden.....	7,706	1,417	...	\$50	1	0	0	1/1	1-2	361	273
Hospital of the University of Pennsyl- vania * ¹	Philadelphia..... E. P. Pendergrass.....	13,769	7,237	49	None	2	0	0	10/1	1	244	101
Jefferson Medical College Hospital *	Philadelphia..... K. Kornblum.....	16,524	6,503	...	None	2	0	0	7/1	1-3	526	257
Pennsylvania Hospital *	Philadelphia..... P. A. Bishop.....	10,620	2,073	116	\$20	0	0	2	7/1	2	263	150
Philadelphia General Hospital * ¹	Philadelphia..... B. P. Widmann.....	20,634	16,873	\$100	1	0	0	0	8/1	1-2	3,220	1,937
Presbyterian Hospital *	Philadelphia..... E. W. Spackman.....	14,357	2,095	72	\$50	1	0	1	6/1&7/1	1-2	248	204
Temple University Hospital *	Philadelphia..... W. E. Chamberlain.....	14,924	3,939	...	\$40	3	0	0	9/1	3	101	55
Mercy Hospital *	Pittsburgh..... H. N. Mawhinney.....	9,668	672	264	...	1	0	0	9/1	1	4-4	158
Robert Packer Hospital *	Sayre, Pa..... S. P. Perry.....	4,754	1,739	...	\$58	1	0	1	9/1	3	266	107
Roper Hospital *	Charleston, S. C..... B. Kalayjian.....	6,639	18,041	11	\$40	1	1	0	7/1	1-2	529	194
John Gaston Hospital *	Memphis, Tenn..... W. D. Anderson.....	13,584	3,866	73	\$22	1	1	0	7/1	1-3	1,066	257
Methodist Hospital *	Memphis, Tenn..... S. W. Coley.....	2,966	2,320	59	\$50	1	0	0	7/1	3	176	63
Vanderbilt University Hospital *	Nashville, Tenn..... C. C. McClure.....	11,710	3,836	60	\$35	0	1	0	7/1	2	351	218
Baylor University Hospital *	Dallas, Tex..... C. L. Martin.....	2,531	3,591	\$55	0	0	1	0	7/1	1-2	345	129
Parkland Hospital * ¹	Dallas, Tex..... P. E. Wigby.....	14,504	4,019	61	\$10	1	0	0	7/1	1	661	203
John Sealy Hospital *	Galveston, Tex..... J. B. Johnson.....	8,281	2,250	63	\$75	1	0	0	7/1	1	207	172
Mary Fletcher Hospital *	Burlington, Vt..... A. B. Soule, Jr.....	2,954	3,106	48	\$50	1	0	0	7/1	1	172	69
University of Virginia Hospital *	Charlottesville..... V. W. Archer.....	12,831	3,951	126	\$37	1	1	0	7/1	3	225	133
Medical College of Virginia, Hospital Division * ¹	Richmond..... F. B. Manderville.....	10,033	2,990	103	\$20	1	0	0	7/1	1	704	244
State of Wisconsin General Hospital * ¹	Madison..... E. A. Pohl.....	22,634	10,579	263	\$25	1	2	0	7/1	3	551	227
Columbia Hospital *	Milwaukee..... S. A. Morton.....	2,251	289	25	\$25	1	0	0	7/1	1-3	112	63

26. SURGERY

			Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Visits	Beginning Salary	Residents	Assistant Residents	Fellowships	Service Begins	Length of Service (Years)	Deaths	Autopsies
Hillman Hospital *	Birmingham, Ala.	J. M. Mason and D. S. Moore	1,783	100	13,150	\$50	2	0	0	0	7/1	1	145	81
Employees' Hospital of the Tennessee Coal, Iron and Railroad Company *	Fairfield, Ala.	L. Noland	1,067	..	13,245	\$150	1	0	0	0	7/1	2	17	5
Baptist State Hospital *	Little Rock, Ark.	R. M. Eubanks	2,079	23	.....	\$200	1	0	0	0	7/1	3	54	9
General Hospital of Fresno County *	Fresno, Calif.	J. H. Pettis	3,451	100	.....	\$65	1	2	0	0	7/1	1-3	101	47
Cedars of Lebanon Hospital *	Los Angeles	.....	1,984	29	3,444	\$75	1	0	0	0	7/1	1	70	30
Los Angeles County Hospital *	Los Angeles	G. Thomason	8,330	100	35,745	\$10	7	0	0	0	1/1&7/1	3 1/2	788	350
White Memorial Hospital *	Los Angeles	G. Thomason	1,015	3	8,381	\$80	1	0	0	0	7/1	1-3	49	22
Alameda County Hospital *	Oakland, Calif.	L. P. Adams and C. A. Dukes	1,602	92	.....	\$40	1	1	0	0	7/1	1-3	103	67
San Bernardino County Charity Hosp. *	San Bernardino, Calif.	O. G. Hilliard	675	100	5,085	\$100	1	0	0	0	7/1	1	71	34
San Diego County General Hospital *	San Diego, Calif.	M. C. Harding	3,053	100	.....	\$80	1	0	0	0	7/1	1	239	81
Hospital for Children *	San Francisco	A. Kilgore	553	4	2,139	\$25	0	1	0	0	7/1	1	12	4
Mary's Help Hospital *	San Francisco	E. Carlson	516	4	4,862	\$75	1	0	0	0	7/1	1	25	5
Mount Zion Hospital *	San Francisco	H. Brunn	1,877	18	5,710	\$50	1	0	0	0	6/15	1	30	17
St. Luke's Hospital *	San Francisco	A. Weeks	4,150	20	.....	\$100	1	0	0	0	7/1	1	63	25
San Francisco Hospital *	San Francisco	H. Brunn and L. Eloesser	2,889	100	.....	\$50	9	0	0	0	7/1	1	...	...
Stanford University Hospitals *	San Francisco	E. Holman	1,060	2	14,755	\$75	1	4	0	0	7/1	1-2	58	32
University of California Hospital *	San Francisco	H. C. Naffziger	1,336	53	15,107	\$25	1	8	0	0	9/1	1+	33	21
Santa Clara County Hospital *	San Jose, Calif.	D. R. Wilson	2,380	100	5,118	\$150	1	0	0	0	7/1	1	...	...
Colorado General Hospital *	Denver	C. F. Hegner	755	57	4,859	\$75	1	0	0	0	7/1	1	55	41
St. Luke's Hospital *	Denver	H. S. Finney	3,462	3	.....	\$50	1	0	0	0	7/1	1	95	30
Grace Hospital *	New Haven, Conn.	T. Russell	1,852	18	1,126	\$90	1	1	0	0	7/1	3	76	33
New Haven Hospital *	New Haven, Conn.	S. C. Harvey	2,663	37	15,299	\$2	6	0	0	0	1/1&7/1	1+	107	63
Memorial Hospital *	Wilmington, Del.	J. G. Spackman	1,246	34	50	\$150	1	0	0	0	7/1	1-3	41	24
Central Dispensary and Emergency Hospital *	Washington, D. C.	J. F. Mitchell	2,648	22	3,149	\$41	1	2	0	0	6/15	1-3	69	22
Freedmen's Hospital *	Washington, D. C.	E. L. Howes	1,116	85	8,251	\$1	4	0	0	0	7/1&10/1	1-2	79	21
Gallinger Municipal Hospital *	Washington, D. C.	C. S. White	1,790	99	9,641	\$25	1	2	0	0	7/1	1	112	51
Garfield Memorial Hospital *	Washington, D. C.	H. H. Kerr	4,548	..	1,258	\$50	1	1	0	0	7/1	1-2	110	25
Georgetown University Hospital *	Washington, D. C.	J. A. Cahill	1,754	26	2,269	\$42	1	1	0	0	7/1	1-2	36	9
Providence Hospital *	Washington, D. C.	.....	2,823	25	14,809	\$75	1	1	0	0	7/1	3	85	69
Duval County Hospital *	Jacksonville, Fla.	E. Jelks	974	100	.....	\$30	1	2	0	0	7/1	1	89	40
James M. Jackson Memorial Hospital *	Miami, Fla.	.....	4,734	53	.....	\$100	1	0	0	0	7/1	1	151	41
Grady Hospital *	Atlanta, Ga.	.....	3,380	100	49,133	\$40	2	4	0	0	7/1	1+	219	89
St. Joseph Infirmary *	Atlanta, Ga.	G. P. Huguley	2,206	10	2,832	\$75	1	1	0	0	7/1	1-2	43	12
University Hospital *	Augusta, Ga.	J. H. Sherman	2,679	29	5,849	\$40	1	2	0	0	7/1	1	114	24
Emory University Hospital *	Emory University, Ga.	D. C. Elkin	4,012	..	.....	\$50	1	1	0	0	7/1	1+	30	13
Augustana Hospital *	Chicago	N. M. Percy	1,663	15	.....	None	1	0	0	0	1/1	1	51	15
Cook County Hospital *	Chicago	M. Davison	13,247	100	11,333	\$25	12	0	0	0	1/1&7/1	1-3	999	263
Grant Hospital *	Chicago	.....	1,384	5	5,050	\$50	2	0	0	0	7/1	1-3	42	8
Mercy Hosp.-Loyola University Clinics *	Chicago	L. D. Moorhead	1,755	20	2,429	\$50	1	0	0	0	7/1	3	43	17
Michael Reese Hospital *	Chicago	S. Strauss	3,427	43	9,146	\$50	2	0	0	0	1/1&7/1	1	97	54
Mount Sinai Hospital *	Chicago	V. L. Schragar	1,494	35	6,238	\$30	1	0	0	0	7/1	1	22	8
Norwegian-American Hospital *	Chicago	J. V. Fowler, Sr.	2,056	..	.....	\$25	1	0	0	0	7/1	1	25	10
Passavant Memorial Hospital *	Chicago	L. Davis	1,686	14	7,377	None	3	0	1	0	1/1&7/1	1	50	35
Presbyterian Hospital *	Chicago	V. David	2,303	13	.....	\$62	2	0	0	0	1/1	1-3	52	26
Provident Hospital *	Chicago	C. G. Roberts	1,738	62	17,655	\$50	1	0	2	0	9/1	1-5	69	41
Research and Educational Hospital *	Chicago	W. H. Cole	1,050	100	17,786	\$50	3	0	0	0	7/1&9/1	1-3	56	47
St. Joseph Hospital *	Chicago	H. McKenna	895	5	825	\$75	1	0	0	0	7/1	1	26	10
St. Luke's Hospital *	Chicago	H. E. Jones	3,986	7	8,703	\$25	3	0	0	0	7/1	1-3	78	69
University of Chicago Clinics *	Chicago	D. B. Phenister	1,580	36	18,601	\$25	1	4	6	0	1/1&7/1	1-6	71	54
Wesley Memorial Hospital *	Chicago	R. W. McNealy	2,235	15	222	\$35	2	0	0	0	7/1	1-2	47	23
Evanston Hospital *	Evanston, Ill.	F. Christopher	3,291	16	9,049	\$33	0	0	1	0	7/1	1-2	41	35
Indianapolis City Hospital *	Indianapolis	M. N. Hadley	1,409	95	17,301	\$41	3	0	0	0	7/1	1-2	60	25
Indiana University Medical Center *	Indianapolis	W. D. Gateh	1,295	60	5,352	\$33	3	2	0	0	7/1	1-3	61	34
Methodist Hospital *	Indianapolis	H. S. Leonard	8,488	6	.....	\$35	1	0	0	0	7/1	1-2	171	48
University Hospitals *	Iowa City	F. R. Peterson	3,134	87	5,456	\$21	1	6	0	0	7/1	1-6	151	97
University of Kansas Hospitals *	Kansas City, Kan.	T. G. Orr	2,129	56	9,978	\$50	1	3	0	0	7/1	1-4	61	33
St. Joseph's Hospital *	Lexington, Ky.	F. W. Rankin and W. O. Bullock	1,061	12	.....	\$75	1	1	0	0	7/1	1-2	82	41
Louisville City Hospital *	Louisville, Ky.	R. A. Griswold	1,801	98	20,347	\$14	15	1	0	0	7/1	1-4	159	61
St. Joseph Infirmary *	Louisville, Ky.	I. Abell, Sr.	4,133	..	.....	\$25	1	1	0	0	7/1	1-2	83	23
Charity Hospital *	New Orleans	U. Maes and A. Ochsner	13,312	100	49,830	\$25	3	10	0	0	7/1	1-4	598	163
Touro Infirmary *	New Orleans	L. H. Landry	3,003	35	12,974	\$25	1	1	0	0	7/1	1	121	72
Baltimore City Hospitals *	Baltimore	T. B. Aycock	2,637	92	.....	\$12	1	4	0	0	7/1	1	183	63
Bon Secours Hospital *	Baltimore	G. Stewart	929	12	901	\$25	1	2	0	0	7/1	4	47	13
Church Home and Infirmary *	Baltimore	T. S. Cullen	1,956	22	.....	\$20	1	3	0	0	7/1	2-4	54	23
Franklin Square Hospital *	Baltimore	E. S. Johnson	1,073	37	.....	\$25	1	2	0	0	7/1	1	13	5
Hospital for Women	Baltimore	W. Reinhoff	537	18	3,248	\$50	1	2	0	0	7/1	1	81	52
Johns Hopkins	Baltimore	W. M. Fitor	2,239	45	49,547	None	1	6	0	0	7/1&9/1	1-7	81	52
Maryland General	Baltimore	R. P. Bay	2,265	33	4,412	\$25	3	2	0	0	7/1	1-4	97	15
Mercy Hospital *	Baltimore	W. D. Wise	2,106	35	5,954	\$50	1	4	0	0	9/1	3	72	29
Provident Hosp. and Free Dispensary *	Baltimore	G. C. Finney	650	72	737	\$45	2	0	0	0	10/15	1-4	54	12
St. Agnes' Hospital *	Baltimore	G. A. Stewart	3,901	81	7,399	None	1	2	0	0	7/1&10/1	1	92	23
St. Joseph's Hospital *	Baltimore	W. Geraghty	1,277	40	5,855	\$10	2	2	0	0	7/1	1-4	49	13
Sinai Hospital *	Baltimore	A. Ullman	1,355	34	6,317	\$50	1	2	0	0	7/1	1-4	50	10
South Baltimore General Hospital *	Baltimore	C. Maxson	1,114	41	5,062	\$20	1	3	0	0	7/1	1-4	102	38
Union Memorial Hospital *	Baltimore	J. M. T. Finney, Jr.	4,227	15	8,826	\$40	1	5	0	0	7/1	1-5	60	31
University Hospital *	Baltimore	A. M. Shipley	2,430	50	11,126	\$25	1	5	0	0	7/1	3	36	17
West Baltimore General Hospital *	Baltimore	N. C. Marvel	2,978	30	7,146	\$25	3	0	0	0	7/1	1	47	81
Beverly Hospital *	Beverly, Mass.	P. P. Johnson	1,283	2	792	\$75	1	0	0	0	Varies	1	67	47
Beth Israel Hospital *	Boston	C. G. Mixer	2,471	21	487	None	1	2	0	0	1/1&7/1	1-2	63	105
Boston City Hospital *	Boston	I. J. Walker	12,339	89	170,756	5	1	0	0	0	Varies	1+	572	105
Children's Hospital	Boston	W. E. Ladd	1,373	53	13,425	\$56	1	0	0	0	1/1&7/1	1	62	51
Lahey Clinic	Boston	F. H. Lahey	3,500	...	.....	\$100	0	1	0	0	Quart.	1-3	54	59
Massachusetts General Hospital *	Boston	E. E. Churchill and A. W. Allen	6,839	48	30,670	\$42	2	2	0	0	1/1	1-3	51	33
Massachusetts Memorial Hospitals *	Boston	H. M. Clute	2,905	31	2,743	\$50	2	0	0	0	8/1	2	52	32
Peter Bent Brigham Hospital	Boston	E. C. Cutler	3,126	94	42,978	\$41	1	5	3	0	Quart.	1+	106	71
Cambridge Hospital *	Cambridge, Mass.	H. P. Stevens	1,200	11	4,842	\$35	1	0	0	0	1/1	1	...	...
Truend Hospital *	Fall River, Mass.	P. E. Truesdale	1,483	19	.....	None	3	0	0	0	1/1&7/1	1	37	22
Memorial Hospital *	Worcester, Mass.	B. H. Alton	1,531	13	2,358	\$100	1	0	0	0	8/1	1-2	37	21
Worcester City Hospital *	Worcester, Mass.	B. F. Andrews	3,474	63	.....	\$75	1	0	0	0	1/1	1-2	219	69
University Hospital *	Ann Arbor, Mich.	F. Collier	3,241	74	16,439	\$25	6	5	0	0	7/1	1-3	141	73
Alexander Blain Hospital	Detroit	W. Blain and I. G. Downer	813	..	.....	\$75	3	0	0	0	7/1	1-3	22	12
City of Detroit Receiving Hospital *	Detroit	C. F. Vale	5,150	100	44,871	\$50	2	4	0	0	7/1	3-4	233	110

Numerical and other references will be found on page 784.

26. SURGERY—(Continued)

	Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Visits	Declining Salary	Residents	Assistant Residents	Fellow- ships	Service Begins	Length of Service (Years)	Deaths	Autopsies
Grace Hospital *	Detroit..... C. S. Kennedy.....	5,258	31	6,570	\$50	1	0	0	9/1	3	180	67
Harper Hospital *	Detroit..... A. D. McAlpine.....	6,745	12	4,584	\$45	1	0	0	1/1	3½	173	44
Henry Ford Hospital *	Detroit..... L. W. Fallis.....	2,163	23	17,231	\$130	1	11	0	7/1	1-5	70	37
Providence Hospital *	Detroit.....	5,237	10	.....	\$100	1	0	0	7/1	1	113	27
Eloise Hospital and Infirmary *	Eloise, Mich..... W. J. Seymour.....	2,415	99	337	\$50	1	3	0	7/1	1-4	129	40
Hurley Hospital *	Flint, Mich..... R. S. Morrish.....	1,346	25	.....	\$42	3	0	0	7/1	1	51	22
Blodgett Memorial Hospital *	Grand Rapids, Mich..... H. J. Vanden Berg.....	1,963	23	.....	\$100	1	0	0	7/1	1-2	35	19
Butterworth Hospital *	Grand Rapids, Mich..... G. H. Southwick.....	3,991	10	.....	\$90	1	0	0	7/1	1-2	126	44
St. Mary's Hospital *	Grand Rapids, Mich..... O. H. Gillett.....	2,249	25	1,345	\$100	1	1	0	7/1	2	130	49
Minneapolis General Hospital *	Minneapolis..... A. A. Zierold.....	2,457	86	13,019	\$25	0	5	1/1&7/1	3-3½	199	112	112
University Hospitals *	Minneapolis..... O. H. Wangenstein.....	1,551	75	9,763	\$50	1	2	4	1/1&7/1	3	100	82
Mayo Foundation	Rochester, Minn..... (See page 784)											
Ancker Hospital *	St. Paul..... A. R. Colvin.....	1,607	98	4,833	\$50	3	0	0	7/1	3	138	111
St. Louis County Hospital *	St. Paul..... F. W. Bailey.....	2,763	98	39,531	\$50	1	3	0	7/1	1-2	111	75
Kansas City General Hospital *	Kansas City, Mo..... B. A. Poorman.....	1,416	100	5,592	\$30	2	0	0	7/1	1-3	98	76
St. Mary's Hospital *	Kansas City, Mo..... M. J. Owens.....	1,470	16	.....	\$30	1	0	0	7/1	1	48	23
Barnes Hospital *	St. Louis..... E. A. Graham.....	4,474	9	17,503	\$25	1	7	0	7/1	1-3	125	70
De Paul Hospital *	St. Louis..... J. W. Thompson.....	1,555	24	770	\$50	1	1	0	7/1	1-2	45	15
Homer G. Phillips Hospital *	St. Louis..... R. Elman.....	2,097	160	11,247	\$75	1	2	0	7/1	1-3	134	17
Jewish Hospital *	St. Louis..... M. W. Myer.....	1,224	100	3,543	\$35	1	1	0	7/1	1-5	44	17
Missouri Baptist Hospital *	St. Louis.....	.....	12	.....	\$50	1	0	0	7/1	1	.....	.....
St. Louis City Hospital *	St. Louis..... A. P. Rowlette.....	2,304	100	24,237	\$50	3	7	0	7/1	1-3	271	113
St. Luke's Hospital *	St. Louis..... E. V. Mastlin.....	961	19	4,157	\$50	0	1	0	7/1	1	88	41
St. Mary's Group of Hospitals *	St. Louis..... L. Rasseleur.....	2,500	39	10,559	\$25	0	5	7/1	3	112	63	63
Creighton Memorial St. Joseph's Hosp. *	Omaha..... C. McMartin.....	3,355	10	3,294	\$30	1	0	0	7/1	1+	90	25
Cooper Hospital *	Camden, N. J..... P. M. McCray and I. E. Deibert.....	1,619	40	25,640	\$33	1	0	0	12/1	3	98	26
Jersey City Hospital *	Jersey City, N. J.....	4,294	90	25,700	\$100	1	2	0	10/1	2-3	219	36
Mountainside Hospital *	Montclair, N. J..... V. B. Seidler.....	870	5	8,846	\$100	1	0	0	7/1	1+	29	10
Burlington County Hospital *	Mount Holly, N. J..... W. E. Lee.....	809	36	3,497	\$100	1	0	0	7/1	1	47	19
Albany Hospital *	Albany, N. Y..... J. L. Donhauser.....	2,853	3	7,529	\$25	1	3	0	7/1	1	94	60
Coney Island Hospital *	Brooklyn..... D. A. McAteer.....	3,173	100	33,017	\$100	1	1	0	7/1	1	125	29
Cumberland Hospital *	Brooklyn..... M. N. Foote.....	4,941	100	40,700	\$100	1	1	0	7/1	1	99	31
Jewish Hospital *	Brooklyn..... L. M. Davidoff.....	2,106	31	7,455	\$25	1	3	0	8/1	3	108	56
Kings County Hospital *	Brooklyn..... J. Tenopay and R. Barber.....	14,357	100	49,105	\$15	3	3	0	7/1	2	778	178
Long Island College Hospital *	Brooklyn..... E. Goetsch.....	2,022	44	15,818	\$22	1	3	0	7/1	5-6	66	22
Norwegian Lutheran Deaconesses' Home and Hospital *	Brooklyn..... L. Stork and D. Livingston.....	.....	1	21,194	None	1	1	0	7/1	2	67	21
St. Mary's	..... W. V. Pascual.....	2,267	22	11,494	\$25	1	1	0	7/1	2	81	21
Buffalo Ge	..... T. Wright.....	2,071	9	.....	\$25	1	4	0	7/1	1	118	58
Deaconess	.....	3,423	2	466	\$100	1	0	0	7/1	1	79	31
Edward J.	.....										
(Buffalo City Hospital) *	Buffalo..... H. A. Smith.....	1,796	85	6,552	\$30	1	1	1	7/1	3-5	135	43
Millard Fillmore Hospital *	Buffalo..... A. H. Clark.....	1,838	19	744	\$25	1	1	0	7/1	1	69	23
Clifton Springs Sanitarium and Clinic.....	Clifton Springs, N. Y..... A. S. Taylor.....	826	10	.....	\$25	1	0	0	7/1	1-3	16	11
Mary Imogene Bassett Hospital *	Cooperstown, N. Y..... M. A. Melver.....	691	5	.....	\$125	1	0	0	1/1	1-2	35	20
Meadowbrook Hospital *	Hempstead, N. Y..... C. A. Hetteshimer and A. S. Warinner.....	2,804	90	206	\$75	2	0	0	7/1	1-2	109	69
Mary Immaculate Hospital *	Jamaica, N. Y..... F. N. Dealy.....	3,840	21	2,372	None	1	0	0	7/1	1	92	18
Queens General Hospital *	Jamaica, N. Y..... F. N. Dealy.....	3,996	100	19,330	\$15	1	1	0	7/1	1	216	153
Charles S. Wilson Memorial Hospital *	Johnson City, N. Y..... F. G. Moore.....	1,949	1	.....	\$75	1	0	0	7/1	1-3	28	14
Bellevue Hospital *	New York City.....	11,359	100	.....	Varies	6½	0	0	1/1&7/1	2½	.....	.....
Flower-Fifth Avenue Hospital *	New York City..... L. R. Kaufman and J. H. Fobes.....	3,251	5	12,616	\$50	2	0	0	7/1	1	112	19
Harlem Hospital *	New York City..... L. Ginzburg.....	4,573	100	32,920	\$15	1	1	0	1/1&7/1	1	314	31
Hospital for Ruptured and Crippled.....	New York City..... C. G. Burdick.....	1,936	17	4,733	\$20	1	3	0	Quart.	1	22	11
Lenox Hill Hospital *	New York City.....	1,850	35	7,676	\$30	1	0	0	1/1	2	104	42
Metropolitan Hospital *	New York City..... J. H. Fobes.....	1,693	.....	8,635	\$100	2	0	0	7/1	1+	100	21
Montefiore Hosp. for Chronic Diseases *	New York City..... A. A. Berg.....	99	87	.....	\$25	1	2	0	1/1&7/1	1	14	10
Mount Sinai Hospital *	New York City.....	.....	55	.....	\$125	4	3	0	1/1&7/1	1	.....	.....
New York City Hospital *	New York City..... I. Kross.....	1,960	100	9,855	None	1	1	0	7/1	1	127	38
New York Hospital *	New York City..... G. J. Heur.....	4,912	5	5,401	\$25	3	15	0	7/1	1-7	97	61
New York Infirmary for Women and Children *	New York City..... A. Hubert.....	1,143	35	13,651	\$45	1	0	0	7/1	1	12	5
New York Polyclinic Medical School and Hospital *	New York City.....	1,690	12	10,492	None	8	0	0	Quart.	2	61	18
New York Post-Graduate Medical School and Hospital *	New York City..... I. H. Russell.....	3,050	16	25,574	\$30	3	16	0	Quart.	3-4	90	39
Presbyterian Hospital *	New York City..... A. O. Whipple.....	3,503	31	59,574	None	2	14	0	1/1&7/1	1-4	107	69
St. Luke's Hospital *	New York City..... W. F. MacFee.....	2,047	41	17,282	\$25	2	4	0	7/1	3	72	46
Genesee Hospital *	Rochester, N. Y..... C. Sumner.....	2,769	.....	5,015	\$75	1	0	0	7/1	1	83	31
Rochester General Hospital *	Rochester, N. Y..... H. L. Prince.....	1,222	10	7,485	\$50	2	1	0	7/1	1	38	45
St. Mary's Hospital *	Rochester, N. Y..... L. F. Simpson.....	3,161	20	3,199	\$75	1	0	0	7/1	1	37	14
Strong Memorial and Rochester Municipal Hospital *	Rochester, N. Y..... J. J. Morton.....	2,381	62	15,206	\$12	1	5	0	7/1	1-4	162	106
Hospital of the Good Shepherd *	Syracuse, N. Y..... A. G. Swift.....	3,494	2	.....	\$35	1	1	0	7/1	1	108	42
Grasslands Hospital *	Valhalla, N. Y..... G. C. Adie.....	632	91	4,822	\$75	1	2	0	7/1	1-3	55	42
Duke Hospital *	Durham, N. C..... D. Hart.....	2,005	63	8,287	\$12	1	8	0	7/1	3-4	95	54
Watts Hospital *	Durham, N. C..... F. Roberson.....	1,781	24	6,973	\$25	1	2	0	7/1	1	25	9
Rutherford Hospital	Rutherfordton, N. C..... R. H. Crawford.....	887	18	4,603	None	1	0	0	7/1	1	2	0
City Hospital *	Winston-Salem, N. C.....	1,596	38	8,122	\$50	2	2	0	7/1	2-3	69	21
Trinity Hospital *	Minot, N. D..... A. L. Cameron.....	200	10	10	\$35	1	0	0	7/1	3	12	10
City Hospital *	Akron, O.....	4,623	33	1,932	\$55	1	3	0	7/1	1-3	192	91
St. Thomas Hospital *	Akron, O..... A. F. Dörner.....	1,282	20	.....	\$30	1	0	0	7/1	1	29	11
Mercy Hospital *	Canton, O..... A. W. Warren.....	2,744	19	.....	\$100	1	0	0	7/1	1	109	26
Christ Hospital *	Cincinnati..... R. A. Shank.....	1,959	13	2,143	\$75	0	0	0	6/25	1	98	29
Cincinnati General Hospital *	Cincinnati..... M. R. Reid.....	3,378	87	13,556	.....	12	14	0	9/1	1-6	218	109
Deaconess Hospital *	Cincinnati..... W. R. Grice.....	2,462	6	.....	\$75	1	0	0	7/1	1	88	19
Good Samaritan Hospital *	Cincinnati..... J. D. Miller.....	5,475	5	.....	\$75	4	0	0	7/1	1-4	123	32
Jewish Hospital *	Cincinnati..... J. L. Ransohoff.....	2,274	17	.....	\$45	2	0	0	7/1	1-2	56	21
City Hospital *	Cleveland..... C. H. Lenhart.....	2,445	92	14,247	\$12	10	10	0	7/1	2	282	135
Cleveland Clinic Foundation Hospital.....	Cleveland..... G. W. Crile.....	3,549	.....	40,325	\$50	0	0	0	7/1	1-3	121	61
Mount Sinai Hospital *	Cleveland..... M. E. Bland.....	1,779	13	4,034	\$60	2	0	0	7/1	1-2	61	25
St. Alexis Hospital *	Cleveland..... J. F. Corrigan.....	3,828	35	11,873	\$60	3	0	0	7/1	1-3	103	34
St. John's Hospital *	Cleveland..... G. P. O'Malley.....	1,337	17	.....	\$25	3	0	0	7/1	1-2	29	11
St. Luke's Hospital *	Cleveland..... D. M. Glover.....	3,774	17	17,213	\$25	1	3	0	6/25	4	129	31
St. Vincent Charity Hospital *	Cleveland..... H. B. Wright.....	4,199	32	14,951	\$50	1	3	0	7/1	1	131	34
University Hospitals *	Cleveland..... C. H. Lenhart.....	5,032	25	20,213	\$25	4	4	2	7/1	2	152	57

26. SURGERY—(Continued)

			Chief of Service	Inpatients Treated *	Per Cent Free *	Outpatient Visits	Beginning Salary	Residents	Assistant Residents	Fellow- ships	Service Begins	Length of Service (Years)	Deaths *	Autopsies
Starling-Loving University Hospital *	Columbus, O.	V. A. Dodd	1,730	59	6,573	\$25	1	3	0	7/1	1-5	107	61	
Miami Valley Hospital *	Dayton, O.	A. T. Bowers	3,305	28	.....	\$75	1	0	0	7/1	1	.....	.....
Huron Road Hospital *	East Cleveland, O.	H. L. Frost	1,917	9	2,272	\$40	1	1	0	7/1	1-3	81	37	
Lucas County General Hospital *	Toledo, O.	E. J. McCormick	1,734	100	14,602	\$75	1	0	0	7/1	1	81	25	
St. Elizabeth's Hospital *	Youngstown, O.	J. M. Ranz	3,626	8	.....	\$50	1	1	0	7/1	1-2	92	12
St. Anthony Hospital *	Oklahoma City	R. M. Howard	4,285	8	.....	\$50	1	1	0	7/1	1	111	21
State University and Crippled Children's Hospitals *	Oklahoma City	R. M. Howard	1,485	95	7,142	\$50	2	0	0	7/1	2	107	55	
University of Oregon Medical School Hospitals and Clinics *	Portland	T. M. Joyce	1,294	100	18,573	\$30	1	2	0	7/1	3	142	90	
Abington Memorial Hospital *	Abington, Pa.	D. B. Pfeiffer	1,761	13	4,431	\$25	1	1	0	7/1	2	71	46	
St. Luke's Hospital *	D Bethlehem, Pa.	W. L. Estes, Jr.	2,305	48	745	\$50	1	0	0	7/1	1	96	34	
George F. Geisinger Memorial Hosp. * ¹³	Danville, Pa.	H. L. Foss	2,133	41	10,195	\$50	2	0	0	7/1	1-2	89	19	
Germantown Dispensary and Hospital *	Philadelphia	.....	2,418	24	21,459	\$130	1	0	0	7/1	1-2	58	17
Graduate Hospital of the University of Pennsylvania *	Philadelphia	W. E. Lee and W. Bates	1,301	61	21,578	None	2	0	0	7/1	2	76	23	
Hahnemann Hospital *	Philadelphia	G. A. Van Lennep	3,201	52	12,037	\$50	3	0	0	9/1	2	153	86	
Jefferson Medical College Hospital *	Philadelphia	T. A. Shallow and G. P. Muller	2,890	77	13,549	\$50	2	0	0	7/1	1-3	146	67	
Jewish Hospital * ¹	Philadelphia	.....	3,144	27	4,923	None	1	0	0	6/15	1	125	63
Pennsylvania Hospital *	Philadelphia	W. E. Lee and J. B. Flick	1,754	26	26,190	\$20	0	0	2	7/1&9/1	1-3	76	31	
Philadelphia General Hospital * ¹	Philadelphia	.....	4,754	95	14,181	\$150	1	0	1	7/1	1-2	.....	.....
Temple University Hospital *	Philadelphia	W. W. Babcock	1,499	43	2,181	\$10	3	0	0	7/1	3	75	40	
Woman's Hospital * ²	Philadelphia	.....	805	46	4,537	\$25	1	0	0	7/1	2	12	6
Allegheny General Hospital *	Pittsburgh	O. C. Gaub	2,230	51	14,362	\$55	1	0	0	9/1	1	118	26	
Children's Hospital	Pittsburgh	W. O. Sherman and E. W. Meredith	580	63	1,932	\$35	1	0	0	9/1	1	9	2	
Mercy Hospital *	Pittsburgh	J. P. Griffith	5,242	30	1,236	\$50	1	0	0	9/1	1-3	.....	.....
Montefiore Hospital *	Pittsburgh	L. H. Landon	2,694	33	12,904	\$50	1	0	0	9/1	1	51	27	
St. Francis Hospital *	Pittsburgh	E. W. Meredith	2,487	30	2,656	\$50	2	0	0	9/1	3	114	27	
Reading Hospital * ¹³	Reading, Pa.	W. A. Lebkicker	1,516	49	5,837	\$33	1	0	0	7/1	1	107	61	
Robert Packer Hospital *	Sayre, Pa.	D. Guthrie	2,115	55	5,567	\$75	2	0	2	9/1	2	48	29	
Roper Hospital *	Charleston, S. C.	R. S. Cathcart	1,778	74	9,336	\$40	1	2	0	7/1	1-2	56	24	
Baroness Erlanger Hospital *	Chattanooga, Tenn.	H. Laws, Jr.	4,322	57	16,000	\$75	2	0	0	7/1	1	127	43	
John Gaston Hospital *	Memphis, Tenn.	J. L. McGehee	1,749	95	11,089	\$32	1	1	0	7/1	1	125	28	
George W. Hubbard Hospital of Me- dical College *	Nashville, Tenn.	J. H. Hale	511	60	4,960	\$75	1	0	0	7/1	2-3	61	17	
Nashville General Hospital *	Nashville, Tenn.	L. W. Edwards	1,251	90	18,391	\$25	1	2	0	7/1	1-2	75	20	
Vanderbilt University Hospital *	Nashville, Tenn.	B. Brooks	2,559	.....	25,857	\$35	1	6	5	7/1	1	113	67
Baylor University Hospital *	Dallas, Tex.	C. B. Carter	4,499	15	2,755	\$50	1	1	0	7/1	1	63	16	
Parkland Hospital * ¹	Dallas, Tex.	L. Hudson	2,859	93	17,904	\$10	4	0	0	1/1&7/1	1	175	61	
John Sealy Hospital *	Galveston, Tex.	A. O. Singleton	1,603	73	18,824	\$50	1	2	0	7/1	1	66	33	
University of Virginia Hospital *	Charlottesville	E. P. Lehman	1,928	27	7,888	\$33	1	5	1	7/1	1	87	30	
Norfolk General Hospital *	Norfolk, Va.	.....	3,546	28	5,736	\$50	1	0	0	7/1	1-2	63	14
Medical College of Virginia, Hospital Division * ¹	Richmond	I. A. Bigger	2,533	5	8,213	\$25	2	3	0	7/1	1	147	54	
Jefferson Hospital *	Roanoke, Va.	H. H. Trout	1,993	20	.....	\$150	1	1	0	7/1	2	60	27
King County Hospital * ¹³	Seattle	R. J. O'Shea	1,756	100	24,495	\$125	1	0	0	7/1	1-2	105	55	
Charleston General Hospital *	Charleston, W. Va.	J. E. Cannaday	1,843	10	1,397	\$25	1	1	0	7/1	1-3	50	14	
Laird Memorial Hospital *	Montgomery, W. Va.	W. R. Laird	1,743	16	3,668	\$100	1	2	0	7/1	1-3	45	4	
State of Wisconsin General Hospital * ¹	Madison	E. R. Schmidt	1,885	84	2,302	\$25	3	5	0	7/1	3	98	61	
Columbia Hospital *	"	W. L. Le Cron	2,321	1	.....	\$100	1	0	0	7/1	2	37	25
Milwaukee Children's Hospital	"	L. L. Anderson	2,090	63	12,122	\$50	1	0	0	7/1	1	14	6	
St. Joseph's Hospital * ¹	"	F. A. Stratton	5,504	22	.....	\$40	1	0	0	7/1	1	78	50
St. Mary's Hospital *	Milwaukee	W. C. F. Witte	3,890	18	.....	\$90	1	0	0	7/1	1	63	16
Milwaukee County Hospital * ¹	Wauwatosa, Wis.	J. M. King	4,890	98	25,844	\$50	3	2	0	7/1	1	124	22	

27. THORACIC SURGERY

Olive View Sanatorium ¹	Olive View, Calif.	E. S. Bennett and F. S. Doley	274	86	.....	\$75	1	0	0	Varies	1+	3	2
Norwich State Tuberculosis Sanatorium (Uncas-on-Thames)	Norwich, Conn.	R. G. Urquhart	262	..	.....	\$150	1	0	0	7/1	1½	3	2
City of Chicago Municipal Tuberculosis Sanatorium	Chicago	R. M. Davison	210	100	.....	\$100	1	1	0	1/1	1-2	5	...
Sanatorium Division of Boston City Hospital	Boston	H. Binney	159	100	.....	\$150	1	0	0	Varies	1-2	5	0
University Hospital* ¹	Ann Arbor, Mich.	J. Alexander	592	74	1,819	.....	0	0	6	7/1	2	23	13
Hudson County Tuberculosis Hospital	Jersey City, N. J.	F. Bortone	157	90	140	\$100	1	0	0	9/1	1-2	6	2
Kings County Hospital*	Brooklyn	E. J. Grace	.....	100	115	\$100	1	0	0	7/1	1	61	14
Mount Morris Tuberculosis Hospital	Mount Morris, N. Y.	E. F. Butler	117	95	.....	\$135	1	0	0	7/1	1-2	3	2
Metropolitan Hospital* ¹	New York City	S. A. Thompson	124	...	1,746	\$75	1	0	0	7/1	1+	4	3
Homer Folks Tuberculosis Hospital	Oneonta, N. Y.	J. M. Chamberlain	131	90	280	\$100	0	1	0	7/1	1+	57	21
Sea View Hospital ¹	Staten Island, N. Y.	L. R. Davidson	368	...	.....	None	3	3	0	1/1&7/1	2	...	...
City Hospital*	Cleveland	C. H. Lenhart	.....	92	.....	\$42	1	1	0	7/1	1	...	...
University of Oregon Medical School Hospitals and Clinics*	Portland	R. C. Matson	(New UnH)	.....	.....	\$40	1	1	0	7/1	2	...	...
Mulrdaie Sanatorium	Wauwatosa, Wis.	A. L. Banyal	284	98	.....	\$100	1	0	0	Varies	1-2	6	1

28. TRAUMATIC SURGERY

Morrisania City Hospital*	New York City	G. E. Milani	2,343	100	18,841	\$15	1	1	0	1/1&7/1	1	113	26
Charleston General Hospital*	Charleston, W. Va.	H. A. Swart	945	10	4,653	\$25	1	0	0	7/1	1-3	18	6

29. TUBERCULOSIS

Los Angeles Sanatorium	Duarte, Calif.	J. Rosenblatt	287	100	2,097	\$75	2	0	0	Varies	1-4	35	10
Arroyo-Del Valle Sanatorium	Livermore, Calif.	H. C. Bush	545	100	797	\$125	1	0	0	7/1	1	9	6
Barlow Sanatorium	Los Angeles	H. W. Bosworth	169	7	1,390	\$100	1	0	0	7/1	1	3	2
Los Angeles County Hospital* ¹	Los Angeles	C. Howson	999	100	4,162	\$175	1	0	0	7/1	1	294	118
Pottenger Sanatorium and Clinic ¹	Monrovia, Calif.	F. M. Pottenger	254	1	3,816	\$50	1	0	0	7/1	1	20	6
Bret Harte Sanatorium	Murphys, Calif.	E. P. Smart	345	97	296	\$100	2	0	0	7/1	2	10	0
Olive View Sanatorium ¹	Olive View, Calif.	E. S. Bennett	1,479	66	.....	\$75	2	0	0	Varies	1+	74	21
San Diego County General Hospital*	San Diego, Calif.		156	100	.....	\$40	1	1	0	7/1	3	56	21
San Francisco Hospital* ¹	San Francisco	S. J. Shipman and P. J. Pierson	764	100	.....	\$50	5	0	0	7/1	1+	...	...
Santa Clara County Hospital*	San Jose, Calif.	C. C. Scarborough and C. Ianne	224	100	4,638	\$125	2	0	0	7/1	1	22	8
Fairmont Hosp. of Alameda County ^{1,2}	San Leandro, Calif.	H. G. Trimble	435	100	575	\$145	1	0	0	7/1	1	105	61
Denver General Hospital*	Denver	C. L. Lincoln	160	100	5,707	\$50	1	0	0	7/1	1	52	21

Numerical and other references will be found on page 784.

29. TUBERCULOSIS—(Continued)

	Chief of Service	Inpatients Treated ³	Per Cent Free ⁴	Outpatient Visits	Beginning Salary	Residents	Assistant Residents	Fellow- ships	Service Beginns	Length of Service (Years)	Deaths ⁵	Autopsies
National Jewish Hospital.....	Denver..... C. J. Kaufman.....	405	100	24	\$75	5	0	0	Varies	3	24	11
Sanatorium of the Jewish Consumptives' Relief Society ¹	Spivak, Colo..... A. Rest.....	362	100	1,076	\$100	5	0	0	Varies	3	26	12
Norwich State Tuberculosis Sanatorium (Uncas-on-Thames).....	Norwich, Conn..... H. B. Campbell.....	386	..	.....	\$150	1	0	0	1/15	2	61	14
Gaylord Farm Sanatorium.....	Wallingford, Conn..... D. R. Lyman.....	342	6	600	\$100	2	0	0	Varies	1+	3	0
Tuberculosis Sanatorium (Glenn Dale, Md., P.O.).....	Washington, D. C..... D. L. Finucane.....	533	4	.....	\$150	3	0	0	7/1	1+	144	60
University of Chicago Clinics*.....	Chicago..... R. G. Bloch.....	.....	36	1,018	None	1	1	0	1/1&7/1	1-2	8	6
Macon County Tuberculosis Sanatorium ¹	Decatur, Ill..... D. O. N. Lindberg.....	157	74	3,046	\$100	1	0	0	1/1	1-3	4	2
Peoria Municipal Tuberculosis Sanit. ¹	Peoria, Ill..... M. Pollak.....	253	92	4,160	\$125	2	0	0	7/1&9/1	1-2	20	10
Rockford Municipal Tuberculosis Sanat.	Rockford, Ill..... W. J. Bryan.....	261	100	2,448	\$150	1	0	0	7/1	1-3	19	13
Boehne Tuberculosis Hospital ^{1,2,3}	Evansville, Ind..... P. D. Crimm.....	393	35	.....	\$75	1	2	0	7/1	1-3	49	46
Sunnyside Sanatorium.....	Indianapolis..... F. L. Jennings.....	172	80	822	\$100	1	0	0	7/1	1	37	8
State Sanatorium.....	Oakdale, Ia..... J. H. Peck.....	307	100	794	\$100	1	0	0	7/1	1+	62	42
Western Maine Sanatorium ¹	Greenwood Mountain..... L. Adams.....	318	.....	.....	\$34	1	0	0	Varies	2+	32	14
Baltimore City Hospitals*.....	Baltimore..... H. M. Stein.....	739	92	.....	\$12	1	1	0	7/1	1	197	83
Sanatorium Division of Boston City Hospital.....	Boston..... J. A. Foley.....	1,043	100	.....	\$133	2	4	0	Varies	1-2	134	26
North Reading State Sanatorium ¹⁰	North Wilmington, Mass..... C. C. McCorsion.....	406	..	2,324	\$150	1	0	0	Varies	1	13	1
Rutland State Sanatorium.....	Rutland, Mass..... E. B. Emerson.....	492	35	1,633	\$75	1	0	0	Varies	1	66	29
Norfolk County Hospital.....	South Braintree, Mass..... N. R. Pillsbury.....	273	97	2,015	\$150	2	0	0	Varies	1-3	36	23
Middlesex County Sanatorium.....	Waltham, Mass..... H. D. Chadwick.....	600	..	15,293	\$150	2	0	0	Varies	1	83	45
Belmont Hospital ¹	Worcester, Mass..... R. H. Baker.....	250	..	3,802	\$133	2	0	0	Varies	1-3	38	19
University Hospital ¹¹	Ann Arbor, Mich..... J. Barnwell.....	.....	74	830	\$25	1	1	0	7/1	1-3	16	14
American Legion Hospital.....	Battle Creek, Mich..... W. L. Howard.....	424	100	.....	\$123	1	0	0	Varies	1+	36	9
Herman Kiefer Hospital.....	Detroit..... E. J. O'Brien and B. H. Douglas.....	2,096	98	.....	\$150	13	0	0	Varies	1+	277	98
Michigan State Sanatorium ¹	Howell, Mich..... G. L. Leslie.....	712	99	604	\$125	3	0	0	7/1&8/1	1+	51	14
Ingham Sanatorium ¹	Lansing, Mich..... C. J. Stringer.....	278	5	1,932	\$125	1	0	0	7/1	1-2	32	10
Morgan Heights Sanatorium ¹²	Marquette, Mich..... R. F. Berry.....	215	70	200	\$150	1	0	0	8/1	1-2	17	6
William H. Maybury Sanatorium.....	Pontiac, Mich..... H. S. Willis.....	1,419	..	.....	\$150	3	0	0	Varies	1+	128	73
Oakland County Tuberculosis Hospital.	Pontiac, Mich..... G. A. Sherman.....	398	65	.....	\$150	3	0	0	7/1	1-2	33	14
Nopeming Sanatorium.....	Nopeming, Minn..... A. T. Laird.....	375	..	.....	\$150	2	0	0	1/1	1-3	19	16
Glen Lake Sanatorium ¹	Oak Terrace, Minn..... E. S. Mariette.....	1,207	87	5,728	\$10	1	0	0	Varies	1	117	86
Mississippi State Sanatorium ²²	Sanatorium, Miss..... H. Boswell.....	534	..	758	\$100	1	0	0	7/1	1-3	46	6
Robert Koch Hospital.....	Koch, Mo..... G. D. Kettelkamp.....	807	100	.....	\$100	2	5	0	7/1	1+	72	45
City Isolation Hospital.....	St. Louis..... G. S. Bozalis.....	210	98	.....	\$150	1	1	0	7/1	1	.....	...
Homer G. Phillips Hospital*.....	St. Louis..... D. Myers.....	241	100	484	\$75	1	1	0	7/1	1-3	72	20
Mount St. Rose Sanatorium.....	St. Louis..... L. C. Bolsiniere.....	201	45	.....	\$150	1	0	0	7/1	2	42	19
New Jersey Sanatorium for Tuberculous Diseases.....	Glen Gardner..... S. B. English.....	903	7	9,198	\$83	8	0	0	Varies	1+	18	7
Hudson County Tuberculosis Hospital.	Jersey City, N. J..... B. S. Pollak.....	639	90	10,918	\$100	6	3	..	7/1	1+	158	47
Essex Mountain Sanatorium ²³	Verona, N. J..... B. M. Erickson.....	879	99	1,702	\$200	8	0	0	Varies	1+	174	39
Albany Hospital ¹	Albany, N. Y..... R. J. Harman.....	199	3	1,784	\$100	1	0	0	7/1	1	43	25
Montefiore Hospital Country Sanatorium	Bedford Hills, N. Y..... M. Pinner.....	308	94	.....	\$100	3	0	0	Varies	1+	3	1
Kings County Hospital*.....	Brooklyn..... C. E. Hamilton.....	205	100	9,922	\$100	3	0	0	1/1&7/1	1	51	9
Kingston Avenue Hospital.....	Brooklyn..... F. Murray.....	199	100	.....	\$100	1	1	0	1/1&7/1	1	9	3
Edward J. Meyer Memorial Hospital (Buffalo City Hospital)*.....	Buffalo..... D. K. Miller.....	514	85	4,607	\$59	1	0	0	7/1	3	160	43
Hermann M. Biggs Memorial Hospital ¹	Ithaca, N. Y..... J. K. Deegan.....	416	77	5,431	\$100	0	2	0	Varies	1	43	21
Mount Morris Tuberculosis Hospital.....	Mt. Morris, N. Y..... N. S. Lincoln.....	263	95	5,265	\$100	1	0	0	7/1	1-2	25	18
Bellevue Hospital ¹⁴	New York City..... J. B. Amberson.....	2,541	100	.....	Varies	13 ¹⁰	0	0	1/1&7/1	2	.....	....
Lenox Hill Hospital*.....	New York City..... G. Thorburn.....	173	35	4,337	\$25	1	0	0	7/1	1	6	2
Metropolitan Hospital*.....	New York City..... G. Ornstein.....	771	..	1,728	\$25	1	4	0	7/1	1+	200	35
Montefiore Hosp. for Chronic Diseases ¹⁵	New York City..... M. Pinner.....	422	87	.....	\$100	5	0	0	1/1&7/1	1	69	42
Riverside Hospital.....	New York City..... M. Tschman.....	609	100	.....	\$100	5	0	0	7/1	1	213	37
Homer Folks Tuberculosis Hospital ¹	Oneonta, N. Y..... R. Horton.....	453	90	4,310	\$137	2	1	0	7/1	1+	31	16
Municipal Sanatorium ¹	Otisville, N. Y..... J. Dworetzky.....	1,125	..	.....	\$355	7	0	0	1/1&7/1	1-2	8	1
Iola-Monroe County Tuberculosis Sanat. ¹	Rochester, N. Y..... E. Bridge.....	637	93	11,818	\$100	6	0	0	7/1	1-2	72	36
Sea View Hospital ¹	Staten Island, N. Y..... G. G. Heistein.....	3,661	3	.....	\$100	13	1	0	1/1&7/1	1	408	133
Trudeau Sanatorium.....	Trudeau, N. Y..... F. H. Heise.....	371	2	.....	None	0	2	3	Varies	1+	2	1
Grasslands Hospital*.....	Valhalla, N. Y..... W. G. Childress.....	274	91	5,312	Varies	3	3	0	1/1&7/1	1-3	87	56
Jefferson County Sanatorium.....	Watertown, N. Y..... S. E. Simpson.....	97	100	1,723	\$100	1	0	0	7/1	1-3	10	6
North Dakota State Tuberculosis Sana- torium ¹	San Haven..... C. Northrop.....	610	93	412	\$75	1	0	0	10/1	1½	46	15
Hamilton County Tuberculosis Sanat. ¹	Cincinnati..... E. E. Bishop.....	1,150	85	.....	\$150	10	0	0	7/1	1+	151	65
City Hospital*.....	Cleveland..... J. C. Placak.....	1,269	92	4,766	\$75	2	0	0	7/1	1	201	62
Franklin County Sanatorium ¹	Columbus..... M. D. Miller.....	454	100	1,189	\$125	3	0	0	7/1	1-3	56	25
Sunny Acres, Cleveland Tuberculosis Sanatorium ¹	Warrensville, O..... R. H. Browning.....	671	99	9,989	\$166	3	3	0	7/1	1+	13	4
Eagleview Sanatorium for Consumptives ¹	Eagleview, Pa..... A. J. Cohen.....	344	39	6,328	\$125	2	0	0	Varies	1	27	3
Germantown Dispensary and Hospital*.....	Philadelphia..... F. M. McPhedran.....	51	24	2,636	\$125	1	0	0	7/1	1	9	3
White Haven Sanatorium ¹	White Haven, Pa..... F. A. Craig.....	518	8	.....	\$125	3	0	0	Varies	1+	64	19
State Sanatorium.....	Wallum Lake, R. I..... H. J. Connor.....	779	83	3,777	\$150	9	0	0	Varies	1+	65	31
Pine Breeze Sanatorium.....	Chattanooga, Tenn..... A. Steward.....	461	93	1,220	\$125	1	0	0	1/1	1-2	51	10
Davidson County Tuberculosis Hospital	Nashville, Tenn..... R. R. Crowe.....	535	100	3,921	\$150	1	0	0	7/1	1-3	62	19
Woodmen of the World War Memorial Hospital.....	San Antonio, Tex..... C. J. Koerth.....	255	100	.....	Varies	2	0	0	11/1	1	18	10
King County Tuberculosis Hospital.....	Seattle..... H. Kellogg.....	287	100	3,565	\$100	1	0	0	7/1	1	42	22
Hopemont Sanit.....	A. V. Cadden.....	734	..	.....	\$163	6	0	0	7/1	1+	42	17
Wisconsin State.....	H. M. Coon.....	246	87	.....	\$290	3	0	0	Varies	1+	10	7
Mulrdales Sanato.....	A. L. Banyal.....	750	98	4,832	\$50	1	0	0	Varies	1-2	128	35

30. UROLOGY

Revision of list is now taking place in collaboration with the American Board of Urology

Hillman Hospital*.....	Birmingham, Ala..... W. F. Scott.....	424	100	62,599	\$50	1	0	0	7/1	1	32	8
Los Angeles County Hospital* ¹¹	Los Angeles..... J. J. Crane.....	2,271	100	13,901	\$10	6	0	0	4/1&10/1	3	169	71
White Memorial Hospital*.....	Los Angeles..... R. W. Barnes.....	457	3	6,342	\$50	1	0	0	7/1	1-3	15	7
San Francisco Hospital*.....	San Francisco..... C. M. Johnson and J. R. Dillon.....	705	100	.....	\$50	1	0	1	7/1	1	...	...
Stanford University Hospital*.....	San Francisco..... J. R. Dillon.....	412	2	15,252	\$25	0	1	0	7/1	1-2	13	5
University of California Hospital* ¹	San Francisco..... H. C. Naffziger.....	491	55	15,497	\$25	1	0	0	7/1	1+	8	5
New Haven Hospital*.....	New Haven, Conn..... C. Deming.....	.....	37	2,975	.....	1	0	0	7/1	1+	14	3
Gallinger Municipal Hospital*.....	Washington, D. C..... W. P. Herbst.....	618	.....	.....	\$25	1	2	0	7/1	1	72	47
Grady Hospital*.....	Atlanta, Ga.....	711	109	14,516	\$10	2	2	0	7/1	1+	45	14
Michael Reese Hospital*.....	Chicago..... A. E. Jones.....	599	43	2,773	\$50	1	0	0	1/1	1-2	31	18
University of Chicago Clinics*.....	Chicago..... C. B. Huggins.....	.....	76	4,661	None	0	1	2	7/1	1-2	10	7

30. UROLOGY—(Continued)

		Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Visits	Beginning Salary	Residents	Assistant Residents	Fellowships	Service Begins	Length of Service (Years)	Deaths	Autopsies
Indiana City Hospital *	Indianapolis	W. E. Tinney	452	95	6,211	\$41	1	0	0	7/1	1-2	53	31
Iowa City Hospital *	Iowa City	N. G. Alcock	1,332	87	1,872	\$21	1	0	0	7/1	1-6	80	49
New Orleans City Hospital *	New Orleans	P. J. Kahle and J. G. Pratt	3,293	100	22,841	\$25	3	3	0	7/1	1-3	140	62
Touro Infirmary *	New Orleans	E. Vickery	25	6,200	\$25	1	0	0	0	7/1	1	...	...
Johns Hopkins Hospital *	Baltimore	H. H. Young	901	45	7,520	None	1	2	0	7/1&9/1	1-4	87	23
Beth Israel Hospital *	Boston	E. G. Crabtree	309	21	320	\$39	1	0	0	7/1	2	...	...
Boston City Hospital *	Boston	H. H. Howard	673	89	37,580	\$50	1	1	0	Varies	1+	55	21
Lahey Clinic	Boston	E. E. Ewert	...	...	6,000	\$100	0	1	1	Quart.	1-3	...	...
Massachusetts	Boston	G. G. Smith	680	48	18,479	\$42	1	0	0	7/1	1	26	14
Massachusetts	Boston	S. N. Vose	375	31	4,270	...	1	0	0	7/1	1	12	6
University Hospital *	Ann Arbor, Mich.	R. M. Nesbitt	1,566	74	11,413	\$25	1	2	0	7/1	1-5	47	26
City of Detroit Receiving Hospital *	Detroit	H. W. Plaggenmeyer and W. E. Keane	1,125	100	6,086	\$83	1	1	0	7/1	1-2	36	27
Harper Hospital *	Detroit	F. H. Cole	510	12	2,149	\$45	0	1	0	7/1	1	13	3
Henry Ford Hospital *	Detroit	J. K. Ormond	351	28	10,465	\$130	1	1	0	7/1	3	2	1
Eloise Hospital and Infirmary *	Eloise, Mich.	W. L. Sherman	671	99	280	\$83	1	1	0	7/1	1	40	12
University Hospitals *	Minneapolis, Minn.	C. D. Creevy	556	75	4,275	\$50	0	2	2	1/1&7/1	3	37	25
Mayo Foundation	Rochester, Minn.	(See data below)											
Ancker Hospital *	St. Paul	P. E. V. Foley	358	98	3,642	\$50	1	0	0	6/1	1	35	26
Kansas City General Hospital *	Kansas City, Mo.	R. L. Hoffman	542	100	2,217	\$50	1	0	0	7/1	1-2	29	18
St. Louis City Hospital *	St. Louis	J. F. Patton	852	100	4,408	\$50	1	0	0	7/1	1	57	23
St. Mary's Group of Hospitals *	St. Louis	C. F. Burford	520	39	4,139	\$25	0	1	1	7/1	3	13	8
Atlantic City Hospital *	Atlantic City, N. J.	C. H. deT. Shivers	357	72	17,808	None	1	0	0	7/1	2	2	2
Bayonne Hospital and Dispensary *	Bayonne, N. J.	S. R. Woodruff	476	68	848	None	1	0	0	7/1	1	7	3
Jersey City Hospital *	Jersey City, N. J.		658	90	17,275	\$75	1	1	0	1/1&7/1	1	54	7
Newark City Hospital *	Newark, N. J.	O. O'Crowley	689	100	...	\$20	1	0	0	7/1	1	...	...
Albany Hospital *	Albany, N. Y.	J. E. Heslin	553	3	2,541	\$25	0	1	0	7/1	1	15	10
Kings County Hospital *	Brooklyn	C. S. Cochrane	2,114	100	4,839	\$15	1	1	0	7/1	2	260	21
Long Island College Hospital *	Brooklyn	F. L. Senger	475	44	8,893	\$22	1	1	0	7/1	2	17	7
Buffalo General Hospital *	Buffalo	F. J. Parmenter	629	9	...	\$25	0	1	0	7/1	1	26	10
Edward J. Meyer Memorial Hospital (Buffalo City Hospital) *	Buffalo	F. J. Parmenter	363	85	7,706	\$59	1	0	0	7/1	3	38	7
Queens General Hospital *	Jamaica, N. Y.	F. G. Riley	767	100	6,888	\$15	1	1	0	7/1	1	34	14
Bellevue Hospital *	New York City	A. R. Stevens	1,599	100	...	Varies	3*	0	0	1/1&7/1	2	...	...
Morrisania City Hospital *	New York City	T. Townsend	710	100	4,328	\$15	1	3	0	1/1&7/1	2	24	16
New York City Hospital *	New York City	T. J. Kirwin	401	100	1,355	\$100	1	0	0	7/1	1-2	30	16
New York Hospital *	New York City	O. Lawley and A. Stevens	418	5	902	None	2	2	0	7/1	1-6	40	16
New York Post-Graduate Medical School and Hospital *	New York City	J. A. Hyams	392	16	9,517	\$30	1	0	0	7/1	1	17	3
Presbyterian Hospital *	New York City	J. B. Squier	1,207	31	10,976	\$42	1	5	0	1/1&7/1	3	52	11
Roosevelt Hospital *	New York City	S. A. Beiser	441	9	6,773	None	1	1	0	Varies	1-2	11	5
St. Luke's Hospital *	New York City	H. G. Bugbee	197	41	3,758	\$25	1	0	0	7/1	2	14	7
Strong Memorial and Rochester Municipal Hospitals *	Rochester, N. Y.	W. W. Scott	721	62	7,521	\$42	1	1	0	7/1	4	...	...
Sea View Hospital *	Staten Island, N. Y.	A. J. Greenberger	299	...	...	None	1	1	0	7/1	1	11	4
Duke Hospital *	Durham, N. C.	E. F. Alyea	602	63	4,599	\$42	1	1	0	7/1	3-4	17	7
Watts Hospital *	Durham, N. C.	W. M. Coppridge	348	24	6,973	\$50	1	0	0	7/1	1	2	0
City Hospital *	Cleveland	H. Truttner	295	92	7,234	\$42	1	0	0	7/1	1	...	...
Cleveland Clinic Foundation Hospital	Cleveland	W. E. Lower	699	...	21,949	\$56	0	4	4	7/1	1-3	23	7
University Hospitals *	Cleveland	J. J. Joelson	723	23	10,057	\$50	1	0	0	7/1	2	18	7
Starling-Loving University Hospital *	Columbus, O.	W. N. Taylor	361	59	3,826	\$25	1	1	0	7/1	1-2	23	21
University of Oregon Medical School Hospitals and Clinics *	Portland	J. G. Strohm	262	100	9,371	\$40	1	0	0	7/1	1	42	20
Graduate Hospital of the University of Pennsylvania *	Philadelphia	J. C. Birdsall and W. Mackinney	210	61	13,037	None	1	0	0	7/1	1	6	1
Hospital of the University of Pennsylvania *	Philadelphia	A. Randall	392	27	3,876	None	1	0	0	9/1	3	6	5
Pennsylvania Hospital *	Philadelphia	L. Herman	433	26	6,665	\$20	0	2	2	7/1&9/1	1-2	20	3
Presbyterian Hospital *	Philadelphia	J. C. Birdsall	229	9	10,616	None	1	0	0	6/1	1+	15	13
Mercy Hospital *	Pittsburgh	E. J. McCague	495	30	279	\$25	0	1	1	7/1	3	17	11
Parkland Hospital *	Dallas, Tex.	A. I. Folsom	326	95	3,019	\$10	1	0	0	7/1	2	30	19
University of Virginia Hospital *	Charlottesville	S. A. Vest	483	27	3,306	...	1	1	0	7/1	1	17	4
State of Wisconsin General Hospital *	Madison	I. R. Sisk	664	84	98	\$25	1	1	0	7/1	3	39	23
Milwaukee County Hospital *	Wauwatosa, Wis.	R. S. Irwin	523	98	16,072	\$50	2	0	0	7/1	1+	34	20

Mayo Foundation Fellowships—The Mayo Foundation for Medical Education and Research, Rochester, Minnesota; D. C. Balfour, director; three-year fellowships, beginning quarterly, leading to the degree of M.S. or Ph.D. with field named from the University of Minnesota: In Anesthesia, Dermatology and Syphilology, Internal Medicine, Neurology and Psychiatry, Neurosurgery, Obstetrics and Gynecology, Ophthalmology, Orthopedic Surgery, Otolaryngology, Pathology, Pediatrics, Physical Medicine, Plastic Surgery, Proctology, Radiology, Surgery, Urology; stipend \$900 per year, (clinical fellowships including pathology and radiology—278).

- Compensation arranged by medical school and hospital.
- Represents number of patients.
- In lieu of maintenance.
- Outpatient and home delivery service only.
- Hospital facilities by affiliation.
- Resident selected and paid by Otho S. A. Sprague Memorial Institute.
- Includes residencies, assistant residencies and straight internships following previous intern training.
- Includes ophthalmologic patients.
- Includes otolaryngologic patients.
- Includes two fellowships in gastroenterology.
- Includes four one-year fellowships in gastroenterology.
- Residencies open to women.
- Residencies for women only.
- Inpatients: Numbers refer to total inpatients treated in specialty.
- Obstetrical admissions do not include newborns. In pathology and anesthesiology total hospital admissions are used.
- The percentage of free patients refers to the entire hospital service.
- Deaths and autopsies are reported for individual specialties. In obstetrics only maternal deaths are included; in anesthesiology, pathology and radiology all hospital deaths are listed exclusive of stillbirths.
- Chicago Lying-in Hospital and Dispensary, Chicago.
- Hospital service confined to drug addicts.
- Palmer Memorial Unit.
- Includes neurosurgery.
- Address all applications to superintendent.
- Maternity service at Herman Kiefer Hospital.

- Includes neurology.
- Hospital appoints residents from its own house staff.
- Includes orthopedics.
- Includes obstetrics.
- Applications will be considered only from men who have had a previous year's training in some recognized pathological laboratory.
- Apply to chief of service for information about affiliating hospitals.
- Includes proctology.
- Admissions confined to children.
- Separate appointments approved in roentgenology and radium therapy.
- Several services include obstetrics-gynecology.
- Includes thoracic surgery.
- Private and semi-private pavilions.
- Includes dermatology.
- Dental as well as medical degree required.
- Includes gynecology.
- Two residents serve six months on obstetrics.
- Includes x-ray and radium therapy.
- Affiliated with Free Hospital for Women, Brookline, Mass.
- Affiliated with Bishop De Goesbriand Hospital, Burlington, and Fanny Allen Hospital, Winoski.
- Mixed residencies represent general hospital experience of at least one year's duration following an approved internship. All hospitals approved for intern training are also certified for general or mixed residencies.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, AUGUST 31, 1940

THE PLATFORM OF THE AMERICAN MEDICAL ASSOCIATION

The American Medical Association advocates:

1. The establishment of an agency of the federal government under which shall be coordinated and administered all medical and health functions of the federal government exclusive of those of the Army and Navy.
2. The allotment of such funds as the Congress may make available to any state in actual need, for the prevention of disease, the promotion of health and the care of the sick on proof of such need.
3. The principle that the care of the public health and the provision of medical service to the sick is primarily a local responsibility.
4. The development of a mechanism for meeting the needs of expansion of preventive medical services with local determination of needs and local control of administration.
5. The extension of medical care for the indigent and the medically indigent with local determination of needs and local control of administration.
6. In the extension of medical services to all the people, the utmost utilization of qualified medical and hospital facilities already established.
7. The continued development of the private practice of medicine, subject to such changes as may be necessary to maintain the quality of medical services and to increase their availability.
8. Expansion of public health and medical services consistent with the American system of democracy.

INTERNSHIPS

The internship is an established institution in this country, mutually profitable to both hospitals and interns. Each year more hospitals seek the privilege of instructing interns. Even in those states in which an internship is not legally required for licensure, practically all medical graduates voluntarily serve this form of apprenticeship. The merits of "straight," "mixed" and "rotating" internships are still debated; probably all of these types are desirable and no one of them should be adopted to the exclusion of others.

Elsewhere in this issue Dr. William Dock¹ discusses the selection of interns and argues that medical students should secure intern appointments largely through their own efforts rather than through the agency of the dean or intern committee. Dr. Dock points out that assumption of responsibility for placing its graduates or fifth year students by the school incurs an obligation to those

hospitals which benevolently accept candidates who rank among the lowest in their class. Having recommended such a man in the fall of his final year, the faculty would scarcely dare to flunk him in June. A fortiori, medical schools should not make the internship a part of their requirement for a degree. Although twenty-five years has elapsed since such a requirement was first adopted at Minnesota, only 17 per cent² of the schools now make an internship obligatory. Certainly it cannot be said that there is any trend toward the inclusion of the internship in the undergraduate medical course.

In order to raise the standards of medical practice and, more particularly, to increase the educational value of internships the universities should, according to Dr. Dock, first clean their own house and raise the quality of the services in the hospitals which they control by inaugurating a more stringent selection of interns and residents and by opening these opportunities to wider competition. He deplores the inbreeding which now too often prevails. In conclusion he states that, "As long as the university attempts to guide or assist the student, this freedom of choice is restricted and the result is harmful to students and to medical schools."

VITAMIN DEFICIENCY AND MYO- NEURAL RESISTANCE

According to experimental data currently reported by Sabin and Duffy¹ of the Children's Hospital, University of Cincinnati, dietary deficiencies in nursing mothers may retard the development of effective constitutional barriers against virus infections in nursing young, even though there is no retardation of normal growth or weight.

About four years ago it was shown by Olitsky and his co-workers² of the Rockefeller Institute that in growing mice there is an acquired resistance to viruses not associated with the presence or absence of humoral antibodies. This was shown in its most striking form on injection of massive doses of the virus of vesicular stomatitis. In mice 2 weeks of age, injected intramuscularly, almost 100 per cent develop fatal paralyses. With 3 week mice there are 85 per cent of fatalities, decreasing to about 15 per cent of mortality by the fourth week. Mice over 6 weeks of age are 100 per cent resistant to this type of injection. No maturation immunity is demonstrable on intracerebral injection, and there are no demonstrable virucidal antibodies. Maturation resistance is apparently due to development of an effective constitutional barrier at the myoneural junction.

Determination of the effect of nutritional factors on this myoneural maturation was attempted by the Cincinnati pediatricians. Because mice continue to suckle their young for about twenty-eight days, Sabin and his

1. Dock, William: Responsibility for Choosing Interns and Internships, this issue, p. 657.

2. Three schools have recently discarded the intern requirement.
1. Sabin, Albert B., and Duffy, Carl E.: Science 91: 552 (June 7) 1940.
2. Olitsky, P. K.; Sabin, A. B., and Cox, H. R.: J. Exper. Med. 61: 723 (Nov.) 1936.

colleagues first studied the effect of nutritional deficiencies in nursing mothers. Female mice were maintained on an "adequate" diet throughout pregnancy and for two days after delivery. On the second day, groups of these nursing mothers were placed on vitamin deficient diets. The breast fed young were tested at various age levels for the efficiency of their myoneural virus defense.

Control groups in which "adequate" maternal diet was continued during the twenty-eight day nursing period showed a normal development of myoneural resistance. With maternal diets deficient in vitamin E or in certain components of the vitamin B complex there was a definite retardation in the normal development of the myoneural barrier. The greatest retardation was noted in groups of sucklings in which the maternal diet had been partially denatured by overcooking (autoclaving).

In their second method of study the young of nursing mothers on adequate diets were weaned on the fourteenth day and placed on various deficiency rations. Control young placed on adequate rations made a good gain in weight and showed a normal development of virus resistance. With vitamin deficient rations, however, the young might have a normal increase in size or weight, but without exception they showed a well marked retardation in development of the myoneural defense.

In 6 week mice reared on adequate diets it has not yet proved possible to break down the matured virus barrier by subsequent vitamin deficiencies. The virus barrier remains wholly effective even after these mice have developed signs of advanced vitamin B₁, E or riboflavin deficiency.

THE NON COMPOS MENTIS TREATMENT OF APPENDICITIS

A recent issue of an extraordinary publication called the *Journal of Drugless Physicians* contains an article entitled "Appendicitis and Its Cure" by one Richard Van Rumpt, PH.C. (what is a PH.C.?), of New York City. "In this treatise," he begins, "we will not discuss causes, pathology and theories. We will discuss the Chiropractic and other manipulative treatment." He then disregards pathology entirely and suggests a manipulative treatment for a serious surgical condition, saying:

The methods to be described will be for acute appendicitis only. By "acute" we mean a typical case, with fever, pain, high white blood count, etc. Let us proceed. We are called to the bedside of a patient suffering with an unmistakable attack of acute appendicitis. The first thing we do after making our thorough physical, laboratory and Chiropractic examination, is to test the Vagus nerve against the appendiceal pain to see if the pain is of vagus origin. . . .

Pressure at the atlas axis area slows down and inhibits the Vagus, which is stimulatory below the diaphragm and also influences the spinal accessory, which is motor to the Vagus nerve. This atlas axis pressure is held until the appendiceal pain clears—from one to three minutes. If after three minutes of pressure the appendix pain remains, it is proof sufficient that this particular case of appendicitis is not of Vagus origin.

Evidently at this point the weirdness of the author's notions caught up with him and he began to mistrust himself. So he continues:

Some might argue, why not adjust the atlas or axis instead of just using inhibition? I do not object to adjusting this area if you so prefer, providing your adjustment is more inhibitory than stimulatory. I sincerely believe that by using the Vagus inhibitory technic as described, you will be taking less of a chance.

Having thus disposed of risk in his own mind, Van Rumpt, PH.C., offers an alternative:

Preferred method number two in the treatment of appendicitis is the localizing method, a la DeJarnette. This method is used whenever there is a direct spinal nerve involvement. Your writer is well aware of the fact that the spinal nerves do not directly supply the appendix with nerve supply. Your writer also knows that the pain of appendicitis is not felt in the appendix itself, but rather in the tissues overlying the appendix, which tissues are supplied by the spinal nerve.

His scientific status now becomes wholly clear. With startling nonchalance he exploits his ignorance:

A special effort is being made in the writing of this article to avoid anatomy, pathology, etc., and keep it therapeutically Chiropractic.

In this avoidance of anatomy, pathology, etc., particularly etc., he is completely successful. The author admits, however, that

The localizing method of treating appendicitis will only work when the engorgement at the appendiceal region has referred to caused an engorgement to exist within the nerve sheath at the 2nd lumbar nerve. We mention the 2nd lumbar nerve specifically because we of the Sacro Occipital Research Society have found that we persistently find this engorgement in all cases of appendicitis with direct spinal nerve involvement. We proceed as follows. . . . The patient's head is turned slightly to take out the slack, similar to giving a cervical break [whether a "cervical break" is to be preferred to appendicitis has not been determined.—Ed.] or rotation adjustment. In adjusting the occiput care must be taken that the chin is not rotated with the neck. [This sounds like a dislocated jaw.—Ed.] In other words, the chin must face straight up to the ceiling. When all the cervical slack is taken up and the chin facing the ceiling, a thrust is given directly on the occipital area that controlled all inferior pain.

Perhaps at this point the patient becomes unconscious or if still conscious leaves the table—the chiropractic table. But if he stays he finds out he is only beginning: . . . "Adjusting the occiput in acute appendicitis, or any other acute pain, will do no good unless it is the lesion that is causing the acute pain," says Van Rumpt, PH.C. But there is also a third method: "Place patient on the left side and bend the right knee onto the abdomen. . . . The technic, after proper contacts are made, is to pull the 2nd lumbar contact toward the operator while pushing the shoulder away from operator. When the contacts and thrusts are properly made, the characteristic Chiropractic pop will be heard." Perhaps the pop is the appendix rupturing! But this method is to be used only "if and when the two previous methods fail." And now Van Rumpt, PH.C., plays his ace: "Your writer strongly suggests that if the three methods described above fail to control the appendiceal pain, you call a surgeon at once [italics ours.—Ed.]. Your writer knows of other methods that

could be used, possibly successfully, but prefers not to use them or discuss them here, for safety's sake." Congratulations, Van Rumpt, PH.C., on calling a surgeon! We only hope it is not too late!!

Current Comment

LIFE AND OSTEOPATHY

In *Life*, which is a picture magazine, for August 19 appears an article entitled "Osteopathy's 'Cure-By-Manipulation' Is Attacked by Regular Physicians." Here a small amount of text is supplemented by a number of photographs, evidently made in or supplied through the osteopathic shrine at Kirksville, Mo., known as the Kirksville College of Osteopathy and Surgery. In the very brief text which accompanies the pictures appear a number of misstatements of fact which, it is not too confidently expected, the magazine may correct. Many of these misrepresentations have been repeatedly exposed in *THE JOURNAL*. In the second paragraph of the article, for example, appears this statement:

In 33 States qualified doctors of osteopathy are permitted to practice on equal or almost equal footing with doctors of medicine. Osteopaths can and do deliver babies, perform surgery, prescribe drugs and take full charge of patients.

The facts are that in only four states (Colorado, Massachusetts, New Hampshire and Texas) for certain, and perhaps in a fifth (Kentucky), may osteopaths now legally prescribe or dispense drugs without restriction. This is true in the first four states mentioned because in those states osteopathic applicants, if licensed at all, must meet the requirements exacted of applicants to practice medicine generally. To this list may be added, after Nov. 1, 1941, a sixth state (New Jersey), where osteopaths licensed after that date will be subject to the same requirements as nonsectarian applicants and will receive an unlimited license to practice medicine. Experience has shown that few osteopaths indeed are able to meet the requirements exacted of applicants to practice medicine generally. In twelve states osteopaths are given limited right to use certain drugs, the drugs concerned varying in the various states. In eight states osteopathic licentiates generally may not use drugs, but the laws contain provisions whereby osteopaths may, under certain conditions, obtain licenses by virtue of which they may use drugs, the law of one of these states even then permitting the use only of a very limited number of drugs. In eight states osteopaths are specifically denied the right to use drugs. In nine states osteopaths secure licenses only to practice osteopathy, without defining the scope of the practice permitted, but no court has ever held that the right to practice osteopathy includes the right to use drugs. In seven states osteopaths are licensed to practice osteopathy as taught in recognized schools of osteopathy which, in effect, denies them the use of drugs, and the Supreme Court of Kansas has recently held that the right to practice osteopathy as taught and practiced in recognized schools of osteopathy confers no right on osteopaths to practice operative surgery or to use remedial drugs. To summarize: In twenty-four states osteopaths

legally cannot under any circumstances use drugs. In eight states by far the greatest number of osteopaths cannot use drugs but it is possible for candidates possessing stated qualifications to obtain that right. In twelve states osteopaths may utilize stated drugs to a limited extent. Only in five states, probably, may osteopaths use drugs without restriction. Obviously, then, from the standpoint of the right to use drugs, which an osteopath must possess if he is "to practice on equal or almost equal footing with doctors of medicine," the article in *Life* is, to put it charitably, indulging in gross exaggeration when it states "In 33 States qualified doctors of osteopathy are permitted to practice on equal or almost equal footing with doctors of medicine."

RESIDENCIES

Institutional apprenticeships in the form of residencies in special fields of medicine, instituted at the Johns Hopkins Hospital in 1889, were but slowly adopted by other institutions. The first list of available residencies published by the Council nearly forty years later included the names of 278 hospitals and 1,776 residencies. In recent years, however, the number of institutions offering this type of service has increased with surprising rapidity. Currently there are 587 hospitals employing 5,118 physicians as residents in specialties. Two factors at least have contributed to this growth; namely, the creation of examining boards in the specialties which require of their candidates training and experience most readily secured in a hospital, and the more and more widespread recognition on the part of hospital staffs that the welfare of patients is enhanced by the presence in the hospital of house officers having greater maturity of judgment and a higher degree of technical skill than can be expected of interns less than one year out of medical school. Growing pains almost inevitably accompany such rapid development. There are not wanting indications that the residency is not yet fully adjusted to its surroundings. In the *New England Journal of Medicine* for June 20 an editorial comments on the financial and educational responsibilities assumed by the hospital embarking on a program of residency training. No doubt the cost for salaries and maintenance is compensated by the advantages which accrue to the hospital. The formulation and execution of a suitable educational program for residents makes demands by no means negligible on the time and energy of the attending staff. The hospital, however, should not assume obligations which it is unable to fulfil and must be content to make that contribution to graduate medical education which its resources, financial, clinical and personal, permit. The candidate who desires five years of training, let us say, in surgery need not necessarily spend the whole time in a single institution. Sometimes he may, with the utmost profit, migrate through several institutions each of which offers something of special value to him. In the appraisal of educational opportunities the time element should never be the sole criterion. It may even be the least important. The content of the program, the methods of instruction, professional standards and the personnel of the staff are the significant factors in evaluating a resident service.

MEDICAL PREPAREDNESS

In this section of The Journal each week will appear official notices by the Committee on Medical Preparedness of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medical preparedness, and such other information and announcements as will be useful to the medical profession.

MEDICAL PREPAREDNESS IN PHILADELPHIA

A course for civilian physicians on "Medical Preparedness in the Present National Emergency" will be given by the Philadelphia County Medical Society at the Society Building, Twenty-First and Spruce streets.

The course will be sponsored also by the following participating organizations:

The Homeopathic Medical Society of the County of Philadelphia.

The Philadelphia County Dental Society.

The Keystone Veterinary Medical Association.

The W. W. Keen Chapter, Association of Military Surgeons of the United States.

It will be in charge of the Committee on National Defense of the Philadelphia County Medical Society and representatives from the other participating organizations.

The first meeting will be held September 10 at 9 p. m., when the following program will be presented:

"The Military Policy of the United States," by Major Russell B. Reynolds, Infantry, U. S. Army.

"The Doctor in the Army," by Lieut. Col. John M. Welch, Medical Corps, U. S. Army.

"The Doctor in the Navy," by Captain John B. Kauffman, Medical Corps, U. S. Navy.

The other meetings will be held weekly on Thursday afternoons from 4:30 to 6 o'clock, beginning September 19 and continuing for several months.

The program for the first afternoon meeting on September 19 will be as follows:

"The Selective Service Act and the Physician."

"The Contemplated Selective Service Act—Machinery and Operation," by Lieutenant Colonel Nicholas K. Biddle, Pennsylvania National Guard.

The following will be the program for the meeting on September 26:

"Noncombatant Military Hospitals and Medical Installations—Civilian Institution Sponsored Hospitals of the Army" (speaker to be announced).

VOLUNTEER SURGICAL UNIT GOES TO ENGLAND

A group of five orthopedic surgeons, a plastic surgeon and a general surgeon under the direction of Dr. Philip D. Wilson, chief surgeon of the Hospital for Ruptured and Crippled, New York, sailed for England August 22 to give their services to British war victims, the New York Times reports.

The group, which also included three surgical nurses, a medical artist and a secretary, is sponsored by the Allied Relief Fund, which is campaigning for medical and civilian relief for England. According to the Times, Dr. Wilson formed the American Hospital in Britain, Ltd., last May after hearing that American medical assistance would be welcomed. Members of this first unit have volunteered for six months' service,

an office will be maintained in New York for servicing the unit and selecting staff replacements. Sufficient equipment to enable the unit to operate independently of British aid for several months was placed aboard the ship.

In addition to Dr. Wilson, the unit included Drs. Donald E. Dial, Frederick William Waknitz, John M. Converse, all of New York; Charles Hickling Bradford, Boston; William Richard Ferguson, Baltimore, and Norman Egel, Rochester, N. Y.; Misses Miriam L. Knight, Adelbert Ethel Overman and Mildred Lillian Lewis, Mrs. Sheila M. Converse and Mrs. Helen Darcy Dial, New York.

TERRITORIAL COMMITTEE ON MEDICAL PREPAREDNESS

The Puerto Rico Medical Association appointed its Territorial Committee on Medical Preparedness to work in cooperation with the state representative of the Committee on Medical Preparedness of the American Medical Association.

The committee has already started to work in the selection of the members that are to make up the local boards, the advisory boards and the inspecting personnel to be employed in the examination of the indicted civilians when the conscription law is approved and goes into effect.

Major Luis de la Vega of the Medical Corps of the National Guard of Puerto Rico, who is in charge of this work, was appointed adviser ex officio of the committee, as his military duties today prevent him from accepting a position in the committee.

The following are members of the Territorial Committee:

Dr. O. Costa Mandry, chairman.
Dr. E. Garrido Morales, San Juan.
Dr. David García, Rio Piedras.
Dr. M. de la Pila Iglesias, Ponce.
Dr. M. Guzmán Rodríguez, Mayaguez.
Dr. Nestor de Cardona, Aguadilla.
Dr. Eduardo Pérez, Guayama.
Dr. Manuel Astor, Arecibo.
Dr. Cesar Domínguez, Humacao.

INVENTORY OF HEALTH RESOURCES FOR DEFENSE PREPARATION

The Temporary Legislative Commission to Formulate a Long Range Health Program held a conference in New York, July 30, with representatives of various agencies on availability of health resources in the state in relation to preparation for national defense. Among the subjects on which the commission sought information were the availability and number of buildings that can be used as hospitals, space and availability for emergency beds in existing hospitals, resources for the production of tetanus toxoid in quantity, availability of

medical schools for teaching public health personnel, methods for selection of specialists, availability of industrial hygienists, dentists and sanitary engineers, the status of present personnel as to membership in National Guard or Reserves, rehabilitation of the unemployed and the number and availability of nurses and physicians. General discussion ended in an expression of opinion that the recommendation might well be made to the government of the state for the setting up of local defense committees embracing the various organizations interested in health, including the medical, dental and pharmaceutical professions, according to a report in the *New York State Journal of Medicine*. The conference was called by Lieutenant Governor Poletti as coordinator for national defense for the state.

NEW YORK PREPARES

At the request of the committee on medical preparedness of the Medical Society of the State of New York, a conference was held in Albany, July 29, of secretaries or other representatives of all county medical societies in the state, officers of the state society and chairmen of the committees on public health and education, public relations and economics, and representatives of the public relations bureau and of the temporary legislative commission to formulate a state health program. Dr. Samuel J. Kopetzky, New York, chairman of the committee on medical preparedness, explained the framework of plans for cooperative work with the government in case of war conditions. Drs. Louis H. Bauer, Hempstead, and Edward T. Wentworth, Rochester, members of the committee, discussed questionnaires which the committee proposes to send out locally in addition to the national questionnaire distributed by the American Medical Association. Dr. O. W. H. Mitchell, chairman of the committee on public health and education, discussed plans for postgraduate instruction in subjects of particular importance in military medicine.

SURGICAL AID FOR THE BRITISH

Forty-eight physicians have formed the Medical and Surgical Supply Committee, with offices at 420 Lexington Avenue, New York, and undertaken a nationwide campaign for surgical and medical supplies to equip 500 first aid stations and field hospitals to aid in caring for the British war wounded. According to the *New York Times*, England has insufficient medical and surgical equipment to meet the present emergency. A first aid post, the committee said, can be equipped for \$500. Among those on the committee are Drs. Joseph Felsen, Conrad Berens and Franz Groedel. The executive chairman of the committee is Mrs. Ronald B. Balcom.

BLOOD TO AID THE BRITISH WOUNDED

The New York Red Cross Chapter has announced that more than 300 persons have volunteered to donate blood to aid in the treatment of British war wounded. The technical work of the project is being done by the Blood Transfusion Betterment Association, Plasma Division, 3 East 103d Street, New York City. Persons willing to donate blood should write or telephone the association, Sacramento 2-8950.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Plague Infection in Fleas.—Plague infection has been proved in a pool of thirty-eight fleas from twenty-one golden mantled ground squirrels submitted to the state department of health laboratory, June 26, from a location 1 mile north of Fawnskin Resort, San Bernardino County.

Graduate Study for Central American Physicians.—The University of California Medical School, San Francisco, has adopted a plan whereby two young graduate physicians who speak English will be sent every year by each of the Central American nations for two years' special study in pre-clinical and clinical subjects under the guidance of an advisory committee. The committee will consist of Drs. Howard C. Naffziger, professor of surgery; Charles L. Connor, professor of pathology, and Ralph Soto-Hall, clinical instructor in orthopedic surgery.

CONNECTICUT

Dr. Blumer Retires.—Dr. George Blumer, since 1920 David P. Smith clinical professor of medicine, Yale University School of Medicine, New Haven, was guest at a dinner in June to mark his retirement from active service at the school. Dr. Francis G. Blake was toastmaster. The speakers included Drs. Stanhope Bayne-Jones, Milton C. Winternitz, William F. Verdi, Fu-ching Yen, a former student of Dr. Blumer and minister of health of the republic of China, and James R. Angell, LL.D. Born in Darlington, England, in 1872, Dr. Blumer graduated at Cooper Medical College, San Francisco, which is now known as Stanford University School of Medicine, in 1891. After serving on the faculties of Albany Medical College, Albany, N. Y., Cooper, and the University of California Medical School, Dr. Blumer joined the staff at Yale as professor of the theory and practice of medicine in 1906, then was John Slade Ely professor of the theory and practice of medicine from 1908 to 1920. He was dean of the school from 1910 to 1920. He has served as president of the New Haven city and county medical associations and of the Connecticut State Medical Society. Dr. Blumer has written extensively on medical subjects and collects prints of medical men as a hobby. He has been a member of the House of Delegates of the American Medical Association for many years.

GEORGIA

Annual Clinical Conference.—The Georgia section of the Southeastern Surgical Congress will hold its annual clinical conference at Statesboro, September 11, at the Bulloch County Hospital. The speakers will include:

- Dr. Alfonso John Mooney Jr., Statesboro, Nephrolithiasis (A Sectional Problem).
- Dr. James H. Whiteside, Statesboro, Ruptured Duodenal Ulcer.
- Dr. Rufus L. Cone, Statesboro, Neurosurgery.
- Dr. Patrick H. Smith, Savannah, Compound Fractures with Gas Bacillus Infection.
- Dr. John C. Patterson, Cuthbert, Educational Value of Rural Meetings of the Southeastern Surgical Congress.
- Dr. Alfonso J. Mooney Sr., Statesboro, Carcinoma of the Uterus.
- Dr. Robert Louis Kennedy, Metter, Cesarean Section.
- Dr. Abram Bird Daniel, Statesboro, Acute Appendicitis with Drainage.
- Dr. Cleveland Thompson, Millen, The Role of the Liver in Surgical Patients.

The speakers at the luncheon will include Dave Turner, editor of the *Bulloch Times*, Dr. Benjamin T. Beasley, Atlanta, secretary-treasurer of the Southeastern Surgical Congress, and Dr. Allen H. Bunce, Atlanta, president-elect, Medical Association of Georgia.

IDAHO

State Medical Meeting at Sun Valley.—The forty-eighth annual meeting of the Idaho State Medical Association will be held at Sun Valley, September 11-14, under the presidency of Dr. Fern M. Cole, Caldwell. A new feature of the program will be instruction courses each morning before the formal program by guest speakers. The lecturers will be:

- Dr. Abram M. Newton, Pocatello, Treatment of Fractures of the Shaft of the Femur.
- Dr. Arthur C. Jones, Boise, Commoner Diseases of the Eye, Ear, Nose and Throat.

Dr. Frank C. Gibson, Potlatch, Traumatic and Industrial Surgery.
Dr. Harry Alban, Kimberly, Acute Anterior Poliomyelitis.
Dr. James O. Cromwell, Blackfoot, The Neuroses.
Dr. Harold E. Dedman, Boise, Endometriosis, Diagnosis and Management.

The guest speakers, all of the State University of Iowa College of Medicine, Iowa City, who will give several addresses each, will be:

Dr. Ewen M. MacEwen, dean and professor of anatomy.
Dr. Adolph L. Saks, assistant professor of neurology.
Dr. Fred M. Smith, professor of theory and practice of medicine.
Dr. Nathaniel G. Alcock, professor of urology.
Dr. Arthur Steindler, professor of orthopedic surgery.

MAINE

Society News.—At a joint meeting of Aroostook, Kennebec, Penobscot, Piscataquis and Somerset county medical societies in Greenville, July 25, Dr. John Homans, Boston, spoke on the following subjects in a surgical panel discussion: head injuries, acute intestinal obstruction, peripheral arterial gangrene and empyema. Dr. William B. S. Thomas, Dover-Foxcroft, discussed "The Cause of Some Diseases of Unknown Etiology."—Dr. Charles B. Sylvester, Portland, was elected president of the Maine Public Health Association at its twenty-ninth annual meeting in Kennebunk, July 11.—Franz U. Burkett, Portland, was chosen president of the Maine Medical-Legal Society at its annual meeting in Rangeley, June 25; Dr. William Holt, Portland, vice president; George L. Pratt, Farmington, secretary, and Walter S. Stinchfield, Skowhegan, treasurer.

MICHIGAN

Society News.—Dr. Richard A. Burke, Palmer, was chosen president-elect of the Upper Peninsula Medical Society at its annual meeting, July 10, and Dr. William Ellwood Tew, Bessemer, was installed as president.—Dr. Victor G. Heiser, New York, discussed "Health in Industry" before the Muskegon County Medical Society, Muskegon, recently.

Personal.—Dr. Robert J. Schneck has been appointed to the public welfare commission of Detroit, succeeding Dr. Frederick H. Cole. Dr. Schneck's appointment is for a four year term ending March 1, 1944.—Edward D. Rich, C.E., associated with the state department of health for twenty-nine years and for twenty-seven years director of the bureau of engineering, has retired, effective July 1. He has been succeeded by John M. Hepler, C.E., associate director, who has been connected with the department since 1919.—Dr. John Alexander, Ann Arbor, received the honorary degree of doctor of science from the University of Pennsylvania, Philadelphia, at the June commencement.

NEBRASKA

Course in Obstetrics and Pediatrics.—A two weeks course in obstetrics and pediatrics will be presented in five towns in western Nebraska, September 9-20, by the division of maternal and child health, Nebraska State Department of Health, in cooperation with the maternal and child health committee of the Nebraska State Medical Association and the University of Nebraska School of Medicine. Drs. Willis E. Brown, assistant professor of obstetrics and gynecology, and John L. Gedgoud, assistant professor of pediatrics at the university, will be the instructors. They will conduct clinics in the afternoons and lecture in the evenings. They will make a circuit each week of the following towns: Alliance, Chadron, Scottsbluff, North Platte and McCook.

NEW JERSEY

Personal.—Dr. Wells P. Eagleton, Newark, retired from the board of trustees of the Medical Society of New Jersey at the recent annual meeting after having served continuously for twenty-one years. The society presented to Dr. Eagleton its award of merit in recognition of "his services as medical director of the Newark Eye and Ear Infirmary for thirty years; for his ability as a brain surgeon; for his contributions to the literature on diseases and surgery of the brain; for the origination and development of many surgical procedures in the field of brain surgery, all of which have contributed to the advancement of scientific medicine in New Jersey and the nation."—Dr. William Russell Greenwood, assistant physician at Rutgers University, New Brunswick, has been appointed university physician and head of the department of student health, it is reported. He succeeds Dr. Joseph H. Kler, who resigned to devote more time to his private practice, but will remain as associate head of the department.

NEW YORK

Report on Typhoid Carriers.—The New York State Department of Health reports that 422 typhoid carriers were under its supervision in upstate New York at the close of 1939. Thirty-six new carriers were added to the list and twenty-six were removed during the year. Twenty-five were discovered as a result of investigation of sporadic cases of typhoid and eight by means of release cultures. Three were added on evidence submitted by other state health departments. Sixteen of those removed died; five were released after cholecystectomy and the required tests and five changed their place of residence.

Annual Chautauqua Meeting.—The ninth annual meeting of the Interstate Medical Association was held in Chautauqua, July 24. Dr. Nathan B. Van Etten, New York, President of the American Medical Association, gave an address; other speakers were Drs. Russell L. Haden, Cleveland, on "The Care of Anemia"; Arthur G. Davis, Erie, Pa., "The Care of Compound Wounds," and Abraham H. Aaron, Buffalo, "Self Medication and Its Dangers." There was also a panel discussion on "Recent Advances in Therapeutics" by Drs. Aaron, Louis Maxwell Lockie, Clayton W. Greene, Francis D. Leopold and Frank Meyers, all of Buffalo.

Society News.—Dr. William J. Hoffman, New York, addressed the Greene County Medical Society, Haines Falls, July 9, on "Modern Treatment of Cancer."—Drs. Samuel Edward Navarra and Milton Sills Lloyd, New York, addressed the Richmond County Medical Society in June on "Management of Strabismus" and "Pathology of Bullous Emphysema" respectively.—The Medical Society of the County of Schenectady has recently organized an orchestra, which gave its first concert at the recent semiannual meeting of the society after four months of rehearsal.—Dr. Leon M. Kysor, Hornell, was elected president of the Lake Keuka Medical and Surgical Association at the recent annual meeting at Penn Yan. Dr. Noble R. Chambers, Syracuse, was elected vice president and Dr. Virgil H. F. Boeck, Dundee, reelected secretary.

New York City

Graduate Courses at New York University.—Graduate courses are now being given in nine fields at New York University College of Medicine, it is announced. The period of study varies from one to three years and may be taken as preparatory training for a residency or complete training for specialty board examinations. Information about this type of work may be obtained from the office of the dean, 477 First Avenue, New York.

Lectures on Venereal Disease.—The bureau of social hygiene of the New York City Department of Health announces two groups of lectures on "Ambulatory Treatment of Venereal Diseases" to be held on Saturday mornings in the fall. The schedule follows:

September 14, Nonsyphilitic Infectious Granulomas.
September 21, Acute Gonorrhea in the Male.
September 28, Postacute Gonorrhea in the Male.
October 19, Infectious Syphilis, Primary.
October 26, Infectious Syphilis, Secondary.
November 2, Venereal Disease Control Measures.

The New York State Department of Health and the U. S. Public Health Service are cooperating in this program as part of the national defense preparedness program.

Medical War Relief Committee.—The American Doctors' War Relief Committee has been formed for neutral, non-military aid to the sick and wounded in Europe. Officers are Dr. Clarence R. Straatsma chairman, Drs. Thomas H. Russell and Walter D. Ludlum Jr. vice chairmen, Dr. E. Forrest Merrill, executive secretary, and Dr. Con Amore V. Burt, treasurer. The committee is arranging to send mobile clinics, consisting of a trailer equipped for emergency operations and two light trucks to carry supplies. Physicians and surgeons to accompany each clinic will be chosen from American volunteers and native nurses will assist them. Each unit will, if possible, serve a circuit of seven towns and villages, devoting one day a week to each. The committee has headquarters at 18 Gramercy Park, with Mr. C. J. B. Harris as corresponding secretary.

NORTH CAROLINA

University News.—The division of public health at the University of North Carolina, Chapel Hill, has been changed to the School of Public Health, with Dr. Milton J. Rosenau as the dean. Dr. Rosenau has been director of the division of public health since it was established in 1936.

New Health Officers.—Dr. Margery J. Lord, Asheville, has been appointed city health officer, effective after she has completed a qualifying course in public health at the University of North Carolina. She has been acting health officer since December 1939. — Dr. James J. Croley, McKinney, Texas, has been appointed health officer of Avery and Yancey counties to succeed Dr. Roderic O. Jones, who has entered private practice in Burnsville. — Dr. Harold C. Whims, Rutherfordton, has resigned as health officer of the Rutherford-Polk counties health unit to take a similar position in the Catawba-Lincoln counties district.

OHIO

Commissioner of Mental Diseases Appointed.—Dr. Roy E. Bushong, superintendent of the Cleveland State Hospital, Cleveland, has been appointed state commissioner of mental diseases. He will collaborate with the department of public welfare in the supervision of the state institutions for the mentally ill, feeble-minded and epileptic. Dr. Bushong succeeds Dr. Jesse Fremont Bateman, Columbus, who resigned to return to his former post as superintendent of the Columbus State Hospital.

PENNSYLVANIA

District Meeting.—The Fifth Councilor District of the Medical Society of the State of Pennsylvania held its annual meeting in York, August 22. Among the speakers were Drs. Charles-Francis Long, Philadelphia, on "Industrial Medicine—A Pressing Problem for All Physicians"; Harvey F. Smith, Harrisburg, "Preventable Deaths Among Youth Groups," and John J. Shaw, state secretary of health, Harrisburg, "Private Practitioner, Keystone of the Public Health Arch." The following officers of the state medical society also made addresses: Drs. Francis F. Borzell, Philadelphia, president-elect; Charles H. Henninger, Pittsburgh, president; Walter F. Donaldson, Pittsburgh, secretary, and Chauncey L. Palmer, Pittsburgh, chairman of the committee on public health legislation.

Philadelphia

Grants for Cancer Research.—The International Cancer Research Foundation has voted a grant of \$1,200 to the Woman's Medical College of Pennsylvania for the use of Dr. Catharine Macfarlane in her studies of cancer of the uterus. The Pennsylvania division of the Woman's Field Army of the American Society for the Control of Cancer has contributed \$250 to the same research.

Dr. Scheffey Succeeds Dr. Anspach.—Dr. Lewis C. Scheffey, clinical professor of gynecology, Jefferson Medical College of Philadelphia, has been elected professor of gynecology to succeed Dr. Brooke M. Anspach, who became professor emeritus. Dr. Scheffey graduated from Jefferson in 1920 and had previously taken a degree in pharmacy from the Philadelphia College of Pharmacy and Science. He served as resident physician in Jefferson Hospital from 1920 to 1922 and has been associated with the department of gynecology since that time. Dr. Anspach has held the chair of gynecology at Jefferson since 1921 and has been on the faculty since 1917.

Retirements at Temple.—Dr. Frank C. Hammond, professor of gynecology at Temple University School of Medicine since 1923 and dean from 1906 to 1929, and Dr. Jesse O. Arnold, professor of obstetrics, have resigned. Dr. Hammond, who is also editor of the *Pennsylvania Medical Journal*, will continue as chairman of the medical faculty. Dr. Arnold will be professor emeritus and senior obstetric consultant. Dr. Thaddeus L. Montgomery, clinical professor of obstetrics at Jefferson Medical College of Philadelphia, has been appointed head of the department of obstetrics and gynecology, succeeding both Dr. Hammond and Dr. Arnold. Dr. Montgomery graduated from Jefferson in 1920.

TENNESSEE

Changes in Health Officers.—Dr. John H. Solomon, Nashville, has been appointed health officer of a new health unit in Marshall County, with headquarters at Lewisburg. — Dr. Harry H. Hudson, Dyersburg, has succeeded Dr. Albert L. Ball, Cleveland, as head of the Bradley County health unit.

Society News.—Dr. Edward T. Newell addressed the Chattanooga and Hamilton County Medical Society, August 1, on "Cancer of the Breast: Cautey Excision Supported by Radium and X-Ray." — Dr. Robert H. Elder, Cedar Hill, discussed "Infant Diarrheas" at a meeting of the Robertson County Medical Society, Springfield, July 16.

VIRGINIA

State Medical Election.—The Medical Society of Virginia chose Dr. Roshier W. Miller, Richmond, as president-elect at its annual meeting at White Sulphur Springs, W. Va., in a joint session with the West Virginia Medical Association. Dr. Walter B. Martin, Norfolk, will become president in October. Vice presidents elected were Drs. John M. Emmett, Clifton Forge; John E. Knight, Warrenton, and Henry B. Mulholland, Charlottesville. The 1941 meeting will be held at Virginia Beach.

WASHINGTON

Dr. Sharples Honored.—A reception and dinner honoring Dr. Caspar W. Sharples, Seattle, on his completion of fifty years of practice was given by the King County Medical Society and the Washington State Medical Association at the Olympic Hotel, Seattle, July 13. About 300 attended. Dr. Sharples graduated from the University of Pennsylvania School of Medicine, Philadelphia, in 1888 and was licensed in 1890. He is chief of staff of the Children's Orthopedic Hospital and medical superintendent of the Seattle General Hospital. He is a past president of the North Pacific Surgical Association.

WEST VIRGINIA

Changes in Health Officers.—Dr. Edward G. McGavran, formerly with the Kellogg Foundation at Hillsdale, Mich., has been appointed health officer of Monongalia County to succeed Dr. Edwin Cameron, Morgantown, who became secretary of the Delaware State Board of Health. — Dr. William W. Hume, Beckley, has resigned as health officer of Raleigh County because of ill health. Dr. James M. Coram, St. Marys, is acting health officer.

Outbreak of Poliomyelitis.—More than 100 cases of poliomyelitis were reported in several counties in southern West Virginia, August 17. Thirty-nine cases, the largest number, with three deaths were reported in Cabell County. Logan County was second with twenty cases. One death each had been reported in Fayette and Kanawha counties. The West Virginia State Medical Association and the state department of public assistance are cooperating with the state department of public health in plans for prevention and rehabilitation. Restrictions against gatherings of children have been in force for several weeks in Huntington, where the disease first made its appearance, it was said.

WISCONSIN

State Medical Meeting in Milwaukee.—The program of the ninety-ninth annual meeting of the State Medical Society of Wisconsin to be held in Milwaukee, September 18-20, will place emphasis on industrial medicine and medicomilitary affairs. Twenty-five speakers from outside the state will appear at general and sectional meetings and at round table luncheons. The list includes:

- Dr. Anthony J. Lanza, New York, Silicosis with Special Reference to Wisconsin Industry.
- Dr. Gordon B. New, Rochester, Minn., Early and Late Treatment of Traumatic Injuries of the Face.
- Dr. Lee Foshay, Cincinnati, The Diagnosis of Brucellosis.
- Dr. Edwin F. Daily, Washington, D. C., Maternal Care and Maternal Mortality.
- Dr. Kellogg Speed, Chicago, Some Common Every Day Injuries Around the Knee Joint.
- Dr. Peter C. Kronfeld, Chicago, The Practical Value of Gonioscopy for the Understanding, Diagnosis and Treatment of Glaucoma.
- Dr. Walter M. Boothby, Rochester, Minn., Physiologic Problems Involved in Aviation.
- Col. Fred T. Cruse, F.A., U. S. Army, a medicomilitary subject.
- Brig. Gen. Ralph M. Immell, adjutant general of Wisconsin, a medicomilitary subject.
- Dr. John A. Bigler, Highland Park, Ill., Treatment of Pneumonia in Children with Sulfapyridine.

Dr. Franklin G. Ebaugh, professor of psychiatry, University of Colorado School of Medicine, Denver, will deliver the Rogers Memorial Lecture Thursday afternoon, September 19, on "Our Mental Health." At the annual dinner at the Hotel Schroeder Thursday evening the speaker will be Dr. Eben J. Carey, Milwaukee.

PUERTO RICO

University News.—Dr. Robert A. Lambert, associate director for the medical sciences, Rockefeller Foundation, New York, was guest of honor at a dinner in San Juan, July 14, given by physicians and former associates at the School of Tropical Medicine, University of Puerto Rico. Dr. Lambert was professor of pathology and the first director of the school, serving from 1926 to 1928.

GENERAL

New Organization of Surgeons.—During the recent annual meeting of the American Surgical Association in St. Louis, a new organization designed for the closer association of younger surgeons of the Middle West and the adjacent Canadian provinces was formed, to be known as the Central Surgical Association. Officers elected were Drs. Roy D. McClure, Detroit, president; Grover C. Penberthy, Detroit, president-elect, and George M. Curtis, Columbus, Ohio, secretary. The first regular meeting will be held in February 1941 at the University Hospital, Ann Arbor, Mich.

Funds for Venereal Disease Control.—The U. S. Public Health Service has allotted \$5,672,388 to the states and territories and the District of Columbia for venereal disease control during the coming year. A special portion of these grants, amounting to \$458,600, has been allotted on the basis of the extent of military and national defense industrial concentrations, it was announced. The remainder will be used to further research in new methods of treatment and diagnosis of syphilis and gonorrhea, for training of personnel, for coordination of educational efforts, and for cooperation with the states in planning and administration of the control program.

Association for Study of Neoplastic Diseases.—The annual meeting of the American Association for the Study of Neoplastic Diseases will be held at the Mayflower Hotel, Washington, D. C., September 5-7. Among speakers announced on the program are:

- Dr. William T. McClure, Wheeling, W. Va., Adenocarcinoma of Ducts Engraffed on Old Cystic Disease.
- Dr. Wright Clarkson, Petersburg, Va., Chronic Cystic Mastitis in the Male.
- Dr. Charles F. Geschickter, Baltimore, Mammary, Gynecologic and Other Forms of Cancer in Rats Treated with Estrogens.
- Dr. Rollin H. Stevens, Detroit, Present Day Treatment of Neoplasia and What Experimental Biochemistry Suggests for the Future.
- Dr. Edgar C. Baker, Youngstown, Ohio, Three Cases of Bone Lesions Causing Paralysis of Lower Extremities.
- Dr. Russell S. Ferguson, New York, Teratoma Testis.
- Dr. Oscar B. Hunter, Washington, D. C., Tumor of the Thyroid Gland.
- Drs. Louis Wallace Frank and Aura J. Miller, Louisville, Ky., Epithelioma of the Labia, with Discussion of Methods of Treatment.
- Dr. Edwin A. Merritt, Washington, D. C., The Revised Clinical Classification of Carcinoma of the Cervix.
- Dr. Louisa E. Keasbey, Lancaster, Pa., Primary Carcinoma of the Fallopian Tube.

Inter-American Society of Microbiology.—Committees have been appointed in fourteen South and Central American countries and in Cuba for the formation of an Inter-American Society of Microbiology, the initial plans for which were made at the close of the meeting of the International Congress of Microbiology in New York in September 1939 (THE JOURNAL, Dec. 23, 1939, p. 2332). The first congress of the new society is scheduled to take place in Brazil, with Dr. Antonio Fontes, director of the Instituto Oswaldo Cruz, Rio de Janeiro, as president. Dr. Francesc Duran-Reynals, research assistant in bacteriology, Yale University School of Medicine, New Haven, Conn., executive secretary, points out that steps that remain to be taken include organization of branches in the United States and Canada, establishment of a relationship with the International Society of Microbiology and establishment in the United States of an inter-American journal of microbiology, to be published in English and open to contributors from all American countries.

Changes in Status of Licensure.—The Alabama State Board of Medical Examiners reports the following:

- Dr. Abijah Clements Fields, Birmingham, license restored, April 15.

The Illinois Department of Registration in Medicine announces the following:

- Dr. James W. Ross, Harrisburg, Ill., license revoked, June 15, for violation of the Harrison Narcotic Act.
- Dr. George Walton Gore, Benton, license revoked, April 20, for conviction of murder.

The Massachusetts Board of Registration in Medicine announces the following action:

- Dr. Herbert N. du Gerardell, East Boston, license revoked, April 18, for gross misconduct in the practice of his profession as shown by deceit.

The Michigan State Board of Registration in Medicine announces the following action:

- Dr. Boyajian Bedros Armen, Fresno, Calif., license revoked, June 11, for violation of the narcotic laws of California.

The New York State Board of Medical Examiners reports the following:

- Dr. Saverio Bonta, New York, license revoked, June 20, on the basis of his having been convicted of a felony.
- Dr. Charles I. Gordon, formerly of Brooklyn, license reinstated; it was revoked June 16, 1939.

American Hospital Association.—The forty-second annual convention of the American Hospital Association will be held at the Hotel Statler, Boston, September 16-20, under the presidency of Dr. Fred G. Carter, Cleveland. A feature of the meeting will be a general session on preparedness with addresses by the surgeons general of the Army, Navy and Public Health Service. Among addresses to be given in section meetings will be the following:

- Dr. Sigismund S. Goldwater, New York, Next Steps in Hospital Service Plans.
- Dr. Thomas T. Mackie and Dorothy DeHart, M.A., New York, A Nutritional Study of Hospital Diets.
- Drs. Herman E. Hilleboe, St. Paul, and Maxim Pollak, Peoria, Ill., The Tuberculosis Problem in Mental Hospitals.
- Dr. Charles F. Wilinsky, Boston, What Is Hospital Indigency?
- Dr. Stanley J. Seeger, Milwaukee, The Content and Management of a Program of Education of Interns and Residents in a Small Hospital.

A symposium on "The Role of the General Hospital in the Control of Tuberculosis" will be presented by the following: Mr. John Hayes, superintendent of Lenox Hill Hospital, New York; Drs. Theodore L. Badger, Boston; Richard H. Overholt, Brookline, Mass.; Monroe J. Tanner, Ridgewood, N. J.; Alice L. Spellman and Katharine G. Amberson, both of Albany Hospital, Albany, N. Y. The annual banquet will be held Thursday evening, September 19, when Dr. Benjamin W. Black, Oakland, Calif., will be installed as president. Other organizations which will meet at the same time include: American Protestant Hospital Association, American Association of Nurse Anesthetists, American Association of Occupational Therapists and American College of Hospital Administrators.

Bequests and Donations.—The following bequests and donations have been announced in recent months:

- Mount Sinai Hospital, \$50,000, and Beekman Street Hospital, \$5,000, by the will of the late Joseph F. Cullman. Both are in New York.
- Lawrence Hospital, Bronxville, New Rochelle Hospital, New Rochelle, N. Y., and Mount Vernon Hospital, Mount Vernon, N. Y., \$1,000 each by the will of the late George L. Bourne, Larchmont.
- French Hospital, New York, \$25,000, and St. Francis Sanatorium for Cardiac Children, Flower Hill, Roslyn, L. I., \$50,000 by the will of the late Carlos W. Munson.
- Touro Infirmary, New Orleans, \$250,000 from Mrs. Norman C. Mayer in memory of her husband.
- French Hospital, New York, \$50,000 by the will of Albert Blum.
- University Hospital, Philadelphia, \$2,500; National Jewish Hospital, Denver, \$2,000, and Jewish Hospital Association, Philadelphia, \$1,000 by the will of Mrs. Anna E. Fridenberg.
- Philadelphia Orthopedic Hospital, \$20,000; Children's Hospital, \$30,000, and Pennsylvania Institute for Instruction of the Blind, \$30,000 by the will of the late Mrs. Josephine Eisenlohr.
- Brady Urological Institute, Johns Hopkins University, Baltimore, \$10,000 by the will of the late Willis Sharpe Kilmer, Binghamton, N. Y.
- Episcopal Hospital of Philadelphia, the residuary estate of Margaret G. Holson, amounting to about \$45,000, after the death of trust fund beneficiaries.
- Jewish Hospital, Philadelphia, approximately \$250,000 to build the Mary and David Hirsch Memorial Home for student nurses at the hospital, by the will of Mrs. Hirsch.
- Germantown Hospital, Germantown, Pa., \$5,000, and Northern Liberties Hospital, Philadelphia, \$1,000 from the estate of the late Liborio Delino.
- Lankenau Hospital, Philadelphia, \$5,000 by the will of Anna Lindhorst.
- Misericordia Hospital and Babies' Hospital, Philadelphia, \$5,000 each by the will of Michael J. Smith.
- Wistar Institute of Anatomy, Philadelphia, about \$13,000 to establish a fund to pay salaries of investigators. The fund was left by Mrs. Frances Hancock Greenman in memory of her husband, the late Dr. Milton J. Greenman, director of the institute for many years.
- Reading Hospital, Reading, Pa., \$10,000, and Crozer Home and Hospital, Chester, \$5,000 by the will of Alvin B. Ehst.
- St. Luke's Hospital and Manhattan Eye, Ear and Throat Hospital, New York, \$10,000 each by the will of the late Mrs. Richard Marsh Hoe.
- Presbyterian Hospital, New York, \$5,000 by the will of Mrs. Lila V. Field.
- New York Skin and Cancer unit of the New York Postgraduate Medical School and Hospital, \$6,000 by the will of Mrs. Miriam L. Mooney.

CANADA

Canadian Society Elections.—Dr. Gordon S. Fahrni, Winnipeg, was chosen president-elect of the Canadian Medical Association at the annual meeting in Toronto in June, and Dr. Duncan Graham, Toronto, became president.—Dr. John H. Holbrook, Hamilton, Ont., was chosen president-elect of the Canadian Tuberculosis Association at the annual meeting in Montreal in June and Dr. J. Arthur Jarry, Montreal, became president. Dr. Robert E. Wodehouse, Ottawa, was elected vice president.

British Columbia Meeting.—The annual meeting of the British Columbia Medical Association will be held in Nelson, B. C., September 9-11. Among the speakers will be Drs. Albert M. Snell, Rochester, Minn., who will speak on "Deficiency States and Their Treatment" and "Problems Presented by the Jaundiced Patient"; Stuart W. Harrington, Rochester, "Diagnosis and Results of Radical Mastectomy for Carcinoma of the Breast in 5,026 Cases" and "Differential Diagnosis of

Diaphragmatic Hernia from Other Abdominal and Intra-thoracic Conditions and Surgical Treatment in 250 Cases" and George H. Anderson, Spokane, "Hyperventilation Syndrome."

Canadian Physicians to Care for Children of British Physicians.—The Canadian Medical Association has informed the British Medical Association that homes of physicians in several provinces are ready to receive more than 1,100 children of British physicians, according to an announcement in the *Canadian Medical Association Journal*. Dr. Thomas C. Routley, Toronto, general secretary of the Canadian association, in a letter sent to secretaries of all divisions explained the plans agreed on by the Dominion and Provincial governments. He suggested that the secretaries ascertain the wishes of the medical profession with regard to the acceptance of children; notify the proper provincial authorities of the homes offered or advise doctors offering homes to notify the local welfare office; advise the doctors offering their homes that all further negotiations leading to the placing of children will be carried on between the governmental agency and the doctor. He also suggested that the divisions organize committees which would be responsible for taking a corporate interest in the children. Among other points in the plan Dr. Routley pointed out that hosts will be expected to provide maintenance and all other costs of these children in a manner similar to the care they would give their own children, except that the Dominion government will be responsible under certain conditions. The host will, for instance, be expected to provide ordinary medical care, but under no circumstances will the host be called on to bear the cost of hospitalization or major medical care, the department of public welfare for Ontario announced.

LATIN AMERICA

Society News.—The first National Congress of Child Welfare (Congreso Nacional de Puericultura) will be held in Buenos Aires, Argentina, October 7-11. Subjects to be discussed include growth and physical development, psychic development, rickets, legislation and organization for prophylactic care of the child, prophylaxis of tuberculosis and indications of syphilis in childhood.

Personal.—Prof. W. H. Hoffmann of the Finlay Institute, Habana, Cuba, has been elected honorary member of the Sociedad Colombiana de Leprologia in Bogotá.—Dr. Clemente Estable, honorary professor of medicine in the National University of Uruguay and chief of the technical laboratory of histologic research in the National Neurologic Institute, Montevideo, is visiting laboratories and medical schools in the United States.—Prof. Octavio do Rego Lopes has been appointed in charge of clinical ophthalmology at the National Faculty of Medicine of the University of Brazil.—Dr. Ramon Castroviejo, New York, recently gave several lectures on ophthalmic surgery as the guest of the Daniel A. Carrión Peruvian Medical Association, Lima, Peru. The Faculty of Medical Sciences gave him an honorary degree and the medical association honored him at a banquet before his departure.

Deaths in Other Countries

Dr. William Russell, emeritus professor of clinical medicine, Edinburgh University, died August 12, aged 89. He was former president of the Royal College of Physicians, was the first editor of the *Scottish Medical and Surgical Journal* and wrote several books dealing principally with diseases of the heart and circulation.—**Dr. Thierry de Martel**, chief surgeon of the American Hospital of Paris, committed suicide on the day that the German Army occupied Paris.

Government Services

Personals

Dr. Edward J. Stieglitz, Garrett Park, Md., has been appointed research associate in gerontology at the National Institute of Health to organize a new unit of research to deal with problems of aging.

Capt. Robert E. Hoyt has succeeded **Capt. Edgar L. Woods** as commander of the Naval Hospital, Washington, D. C. Captain Hoyt was formerly medical officer in charge of the Naval Dispensary at Washington.

Dr. Hermon E. Hasseltine, Medical Director in the U. S. Public Health Service, has been transferred from the National Leprosarium at Carville, La., to Cincinnati as officer in charge of the stream pollution laboratory. **Dr. Guy H. Faget**, recently stationed in San Francisco, replaced Dr. Hasseltine as medical officer in charge at the Leprosarium.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 27, 1940.

The Food Situation

The food situation continues to be good but with the continuance of the war there are further restrictions. Margarine is now rationed as well as butter, and tea is rationed to 2 ounces a week per person. To spare shipping wanted for munitions the campaign to grow more food was started at the outbreak of the war and we have now two million more acres under cultivation. There is plenty of scope for more home grown food, for we are the only nation of which it can be said that normally we produce only 40 per cent of our total food. But our real production is not more than 30 per cent, because part of our home produced animal food is transformed into imported feeding stuffs. It is realized that we may have to go much further in relying on home produced food. In the House of Commons Mr. Hudson, minister of agriculture, stated that we must take steps to raise, as far as was possible, enough food to keep our population alive and in good health, even if our present imports should be seriously imperiled. Scientists stated that our people could exist in a state of health, do hard work, produce munitions and fight on a diet far different from that to which we were accustomed. The greater proportion of this diet could be grown in the country, so that, if necessary, we could manage with greatly reduced imports. He did not know that it would seem a very palatable diet, but the house would perhaps be relieved to know that he had put in a plea that it should be supplemented by beer. The Ministry of Food would lay down what food was to be produced. In many cases farmers would be asked to alter drastically their normal production.

A committee of eminent scientists has been appointed by the government to work out a basic plan of war time food policy. The chairman is Sir William Bragg, president of the Royal Society (physicist). Members of the committee include Prof. E. P. Cathcart, F.R.S. (physiologist), Sir John Boyd Orr, F.R.S., Prof. F. L. Engledow, F.R.S., Prof. A. W. Ashby and Prof. J. A. Scott-Watson (agriculturists) and Sir Edward Mellanby, F.R.S., secretary of the Medical Research Council (biochemist). The committee will work out a basic plan of war time food policy for the country.

Stored Blood for Transfusion

From the Emergency Blood Transfusion Service of Edinburgh and Southeast Scotland C. P. Stewart reports in the *Edinburgh Medical Journal* studies on the use of stored blood in 427 transfusions. He points out that for certain purposes the therapeutic value of blood must steadily decrease during storage. Thus the disappearance of leukocytes, reported by several observers, means that blood should not have been more than two days in store if one of the objects for which it is used is to supply leukocytes. But if the object is to supply fluid and oxygen carrying power there seems no reason, on the basis of laboratory examinations of stored blood, why it should not be used after as much as thirty days of storage. However, clinical trial is essential and it is extremely difficult to judge the relative value of stored and fresh blood. In surgical cases the therapeutic results appear to be independent of the age of the blood. But in such conditions as leukemia, various types of anemia, septicemia and toxemia, blood is now used which has been in store as short a time as possible and the results have greatly improved.

All the transfusions in this series were done with blood which had been withdrawn into 3.8 per cent sodium citrate solution with a final concentration of 0.38 per cent citrate, stored at a temperature of from 2 to 5 C. In most cases it had been filtered

after being stored for forty-eight hours. In the 427 cases there were fifty-eight reactions, of which nine were fatal; sixteen were only febrile, seven were transient jaundice and twenty-six were rigors. The total percentage of reactions was 13.6, which in the 259 cases of the series of transfusions done in the present year was reduced to 10.4 with only one death. This reduction of incidence of reactions coincided with the use of blood of lower average "age." The deaths appeared to be due to acute cardiac failure following injection of fluid and not to any factors which could be attributed to the use of stored blood, though some followed a transfusion reaction (rigor). One writer, V. H. Riddell, states in his book on Blood Transfusion that deaths from circulatory failure after transfusion with fresh blood are much commoner than is generally supposed, although they are rarely reported.

Stewart investigated the relation between the incidence of reactions and the time of storage by classifying the cases into five day periods. Under twenty-four hours the percentage was 12.5, from one to five days 14, from six to ten days 5.2, from eleven to fifteen days 15.6, from sixteen to twenty days 22, from twenty-one to twenty-five days 15 and from twenty-five to thirty days 26. When the cases were further analyzed according to the storage time in days from none to fourteen it was found that blood stored from four to ten days was safer than blood stored for a shorter time and even than fresh blood. The reason for this was not clear, but it might be related to the disappearance of leukocytes during the first few days of storage. The increased reaction incidence after the tenth day may be associated with the disruption of erythrocytes. It appears that stored blood is no more likely to produce reactions during the first fortnight than is fresh blood. But after that period the likelihood of reaction is increased. Therefore, while it is possible to use in cases of emergency blood stored longer than a fortnight, it seems better in ordinary cases to regard this period as the maximum.

SWITZERLAND

(From Our Regular Correspondent)

July 14, 1940.

Injuries in Airplane Crashes

Dr. Wegelin, professor of pathologic anatomy, recently discussed before the medical association of Berne the injuries sustained by fliers who crash to the ground. The injuries, he said, are exceedingly serious. Countless bone fractures, extensive lacerations of the soft parts, bruises and wounds in the abdominal region can be observed. Owing to the sudden increase in intra-abdominal pressure the viscera are eventrated into the thorax cavity with rupture of the diaphragm. Rupture of the scrotum is also observed. The sudden increase of intracardial pressure produces lesions in the region of the heart. The heart is often torn from the large vessels. Cardiac lesions, the speaker said, cause immediate cessation of the circulation. For that reason fat embolism is never observed. According to the literature, hemosiderin is discoverable in the lungs after hemorrhages that occur at high altitudes. This, however, has not been observed in aviators who crash. Wegelin was able to observe a heart that had burst at the apex.

Control of Mental Diseases

In proportion to its population, Switzerland has more institutions for the mentally diseased than any other European country, namely thirty-eight psychiatric beds per 10,000 inhabitants. Every public institution of this kind is provided, on the average, with 500 beds; private institutions have fewer than 100. The majority of mentally diseased patients remain hospitalized a relatively short time. In 1935 half of the inmates were confined for less than three months, 80 per cent for less than one year. Fifteen per cent of the patients were regarded as medically or at least socially cured, 45 per cent as improved

and 25 per cent in statu quo; 15 per cent died. The public cost for the care of the mentally diseased amounts to 20 million Swiss francs (about \$4,500,000) annually. Prophylaxis and control outside institutional care include welfare work, neuropsychiatric policlinics, psychiatric observation stations for children, medicopedagogic arrangements and antialcohol welfare stations. All these agencies were supplemented by the creation about ten years ago of the Swiss national committee for mental hygiene, which deals with all problems connected with the control of mental diseases.

Swiss Society for Gastro-Enterology

The Schweizerische Gesellschaft für Gastro-Enterologie was organized a few years ago and recently held its annual meeting in Basel. The papers dealt with albuminous nutrition for sportsmen, esophagoplasty, effect of corticosterone on idiopathic steatorrhea, diagnosis of ulcers, dieting in colitis ulcerosa, protamine zinc insulin, roentgen therapy in carcinoma of the esophagus, the unexpected improvement in the metabolism due to intestinal baths and the significance of cell content of gastric juice.

Personal

Prof. Friedrich Suter, professor of urology in Basel, celebrated his seventieth birthday.

Dr. Otto Veraguth, associate professor of physical therapy in Zurich and director of the university institute for physical therapeutics, retired. Prof. Kurt von Neergarrrd, his assistant for many years, was appointed to succeed him.

Military Use of Hotels

The Swiss federal council has resolved to use hotels for military and medical purposes. Rates for compensation have been set up.

Deaths

Prof. Charles Edouard Monnier, a pediatric surgeon in Zurich, died in his sixty-fifth year.

Marriages

RICHARD ALEXANDER HAMILTON, Springfield, Ky., to Miss Evelyn Elizabeth Patterson of Chattanooga, Tenn., July 12.

DAVID W. GOLTMAN to Miss Mary Helen Slattery, both of Memphis, Tenn., at Hernando, Miss., July 2.

FRANCIS F. TALBOT, Niagara Falls, N. Y., to Miss Florence O'Donoghue of Washington, D. C., July 15.

SAM MARSHALL COOPER, Knoxville, Tenn., to Miss Evelyn Lorraine Williams in New York, July 12.

JESSE GORDON SEASTRUNK, Columbia, S. C., to Miss Elizabeth Allen Parrott of Charleston, July 6.

WILLIAM SPENCER FAST, Atchison, Kan., to Miss Jane Adele Poindexter of Kansas City, Mo., July 10.

RICHARD L. PEARSE, Durham, N. C., to Miss Harriet Isobel Taggart of Tidjoute, Pa., July 12.

ALBERT CHARLES ESPOSITO to Miss Vernon Elizabeth Dodson, both of Lexington, Ky., July 17.

PAUL JAMES AZAR, Washington, La., to Miss Mary Agnes Saloom of La Fayette, July 15.

WILLIAM REID PITTS, Glen Alpine, N. C., to Miss Elizabeth Creamer of Brooklyn, July 10.

GORDON S. FESSLER, Cincinnati, to Miss Ida Marie Lettieri of Shelby, Ohio, June 29.

WILLIAM B. ARMSTRONG to Miss Henrietta Collier, both of Atlanta, Ga., August 1.

THOMAS JOSEPH HARRIGAN, Altoona, Pa., to Miss Regina Ruth Stevens, July 17.

GEORGE HENRY ZERBST, Sumter, S. C., to Dr. HILLA SHERIFF of Columbia, July 10.

SAMUEL J. HYMAN to Miss Cecelia Fisher, both of Inkster, Mich., July 16.

ALFRED A. GOGLIA, Boston, to Miss Molly Goglia of Bristol, R. I., in July.

Deaths

Howard Lincoln Snyder ☉ Winfield, Kan.; Jefferson Medical College of Philadelphia, 1904; member of the House of Delegates of the American Medical Association from 1936 to 1940; past president of the Kansas Medical Society; member of the board of governors of the American College of Surgeons; state chairman of the American Society for the Control of Cancer; member of the board of regents of the state of Kansas, which has under its supervision all affairs incident to state schools; surgeon on the staff of St. Mary's Hospital and the William Newton Memorial Hospital; aged 61; died, August 16, of coronary occlusion, hypertension and arteriosclerosis.

Everett Foster Jones ☉ Wichita Falls, Texas; University of Texas School of Medicine, Galveston, 1908; fellow of the American College of Surgeons; past president of the Wichita County Medical Society; served during the World War; past president of the Texas Railway Surgeons' Association; on the staffs of the Wichita Falls Clinic-Hospital and Wichita General Hospital; aged 55; died, July 15, of coronary artery disease.

John William Moore ☉ Charleston, W. Va.; University and Bellevue Hospital Medical College, New York, 1899; fellow of the American College of Physicians; served during the World War; at one time a medical missionary; superintendent of the Mountain State Hospital; formerly superintendent of the Charleston General Hospital; aged 70; died, July 20, of coronary thrombosis and arteriosclerosis.

Herbert William Jones, Minneapolis; University of Minnesota College of Medicine and Surgery, Minneapolis, 1901; member of the Minnesota State Medical Association; at one time clinical assistant in medicine at his alma mater; formerly on the staffs of the Northwestern Hospital, City Hospital and the Asbury Hospital; aged 67; died, July 10, of heart disease.

Sidney Israel ☉ Houston, Texas; Medical Department of Tulane University of Louisiana, New Orleans, 1903; member of the American Academy of Ophthalmology and Otolaryngology and the American Laryngological, Rhinological and Otological Society; on the staff of the Jefferson Davis Hospital; aged 53; died, July 17, of acute coronary occlusion.

Herman Orsen Seipel, Valparaiso, Ind.; Chicago College of Medicine and Surgery, 1914; member of the Indiana State Medical Association; formerly health officer of Valparaiso and county coroner; county health officer; on the staff of the Porter Memorial Hospital; served during the World War; aged 54; died, July 19, of coronary occlusion.

Charles Eliot Brown, Leavenworth, Kan.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1904; member of the Kansas Medical Society; formerly county health officer; aged 62; died, June 17, in the Cushing Memorial Hospital of empyema of the gallbladder and hypertensive heart disease.

Joseph Pink Harris ☉ Midlothian, Texas; Tulane University of Louisiana School of Medicine, New Orleans, 1918; past president of the Ellis County Medical Society; served during the World War; aged 57; died, May 18, in a hospital at Waxahachie of injuries received in an automobile accident.

Sterling Price Boothe, Cuero, Texas; University of Tennessee Medical Department, Nashville, 1906; member of the State Medical Association of Texas; served during the World War; on the staff of the Lutheran Hospital; aged 56; died, July 25, in the Nix Hospital, San Antonio, of pneumonia.

Mary Theresa Muldoon ☉ Waltham, Mass.; Tufts College Medical School, Boston, 1915; member of the New England Society of Psychiatry; on the staff of the Walter E. Fernald State School; aged 46; died, July 18, in the New England Hospital for Women and Children, Boston.

Dennis William Heffernan, Framingham, Mass.; Tufts College Medical School, Boston, 1910; fellow of the American College of Surgeons; served during the World War; aged 55; on the staff of the Framingham Union Hospital, where he died, July 22, of carcinoma of the pancreas.

Wallace Hanger Livingston ☉ Santa Fe, N. M.; Medical Department of Tulane University of Louisiana, New Orleans, 1909; past president of the New Mexico Board of Medical Examiners; aged 55; died, May 25, of pulmonary tuberculosis.

John Irvin Maris, Paoli, Ind.; Hospital College of Medicine, Louisville, Ky., 1903; member of the Indiana State Medical Association; president of the school board; served during the World War; aged 60; died, July 15, of coronary occlusion.

Albert Luke Stubbs, Hot Springs, S. D.; College of Physicians and Surgeons, Keokuk, Iowa, 1895; St. Louis College of Physicians and Surgeons, 1898; aged 74; died, June 12, at Edgemont of injuries received in an automobile accident.

Lewis Hunker, Moberly, Mo.; Washington University School of Medicine, St. Louis, 1903; member of the Missouri State Medical Association; aged 61; died, June 23, when he severed his left brachial artery.

Eugene Elmo May, Birmingham, Ala.; University of Nashville (Tenn.) Medical Department, 1900; member of the Medical Association of the State of Alabama; aged 62; died, July 23, of cerebral hemorrhage.

Murray Ross Watson, Mineral City, Ohio; Michigan College of Medicine and Surgery, Detroit, 1898; member of the Ohio State Medical Association; aged 64; died, July 14, of coronary thrombosis.

John Randolph Sledge, Stamford, Texas; College of American Medicine and Surgery, Atlanta, Ga., 1876; formerly health officer and mayor of Stamford; aged 84; died, June 16, of pneumonia.

Ralph Mott Erwin, Portland, Ore.; Chicago College of Medicine and Surgery, 1903; for many years county coroner; aged 55; died, July 12, in the Hahnemann Hospital of coronary thrombosis.

Harry E. Cover, Bantam, Ohio; Medical College of Ohio, Cincinnati, 1897; member of the Ohio State Medical Association; aged 68; died, July 22, of arteriosclerosis and chronic nephritis.

Barton Martin Winters, Goodville, Pa.; Jefferson Medical College of Philadelphia, 1877; aged 85; died, July 22, in Washington, D. C., of hypertensive heart disease and pulmonary edema.

Irvin Rue Peter, Wallace, Mo.; Northwestern Medical College, St. Joseph, 1886; Jefferson Medical College of Philadelphia, 1891; aged 75; died, July 23, of cerebral embolism.

Albert Allen Absher ☉ Sibley, Ill.; College of Physicians and Surgeons of Chicago, 1893; aged 71; died, July 20, in the Brokaw Hospital, Normal, of cerebral hemorrhage.

Charles Barton Lawrence, Columbia, Mo.; University of Louisville (Ky.) Medical Department, 1890; aged 73; died, May 18, following an operation on the prostate.

William Frederick Roberts, Delaware, Ohio; Harvard Medical School, Boston, 1902; aged 66; died, June 30, of cerebral hemorrhage and fracture of the hip.

Benning M. Kennon, McRae, Ga.; Atlanta Medical College, 1889; member of the Medical Association of Georgia; aged 78; died, June 29, of diabetes mellitus.

William Murray Winn ☉ St. Louis; National University of Arts and Sciences Medical Department, St. Louis, 1918; aged 46; died, May 14, of mitral stenosis.

Arthur Leon Brown, Riverside, Calif.; Medical College of Ohio, Cincinnati, 1896; served during the World War; aged 67; died, June 24, of coronary occlusion.

Thomas Roi Barney, San Francisco; Cooper Medical College, San Francisco, 1903; aged 70; died, May 16, of chronic myocarditis and arteriosclerosis.

Wilfred Joseph Johnston, Sarasota, Fla.; University of Toronto Faculty of Medicine, 1916; aged 47; died June 29, in Philadelphia of heart disease.

Patrick Otis Lowe, Laneville, Texas; University of Texas School of Medicine, Galveston, 1913; aged 50; died, July 9, of carcinoma of the left cheek.

John William Shook, Canal Winchester, Ohio; Columbus Medical College, 1885; aged 87; died, July 16, in Lancaster of lung abscess.

H. L. Park, Union City, Tenn.; College of Physicians and Surgeons, Baltimore, 1886; aged 85; died, July 11, of chronic myocarditis.

Gilbert Franklin Buxton, Baltimore; College of Physicians and Surgeons, Baltimore, 1907; aged 63; died, May 6, of myocarditis.

James W. Ryan, Coffeyville, Kan.; Medical College of Ohio, Cincinnati, 1888; aged 73; died, June 8, in Dallas, Texas.

Robert Burton Armstrong, Papillion, Neb.; Medical Department of Omaha University, 1894; aged 75; died, June 28.

David C. Posey ☉ Christiansa, Pa.; Baltimore Medical College, 1908; aged 60; died, July 6, of coronary thrombosis.

Jesse B. Davis, Chicago; American Medical College, St. Louis, 1883; aged 80; died, July 29, of arteriosclerosis.

Correspondence

LACK OF EVIDENCE FOR CHRONIC CARBON MONOXIDE POISONING

To the Editor:—Whether there really is such a disease as that termed "chronic carbon monoxide poisoning," as a consequence of prolonged or repeated exposure to small amounts of the monoxide and continuing after the exposure is stopped, is very doubtful. Certainly its importance in many cases is less medical than legal and financial as a basis for claims for damages to be awarded by a compensation commissioner or a court of law. There is a large literature presenting numerous cases, described with clinical fulness and accuracy in respect to the symptoms of the disorder but with little or no evidence that the patients had ever been exposed to any significant extent to carbon monoxide.

If, then, numerous false claims are not to be bolstered by such papers, it is essential that writers on this subject should be required to report evidence as to the analytic method by which the amount of carbon monoxide in the air or in the blood was determined, how much was found and how long the exposure continued. Such a requirement would at once deprive the greater part of the literature in this field of all evidential value.

The lack of such evidence is exemplified in a paper by Drs. Beck, Schulze and Suter entitled "Carbon Monoxide—A Domestic Hazard with Especial Reference to the Problem in West Virginia" (*THE JOURNAL*, July 6, p. 1) as well as by the previous papers by Dr. Beck and his associates there cited. Among the conditions alleged to be due to carbon monoxide are diseases of the central nervous system, cardiovascular system and gastrointestinal system, and specifically encephalitis, epilepsy, multiple sclerosis, tetany, petechial hemorrhages, coronary thrombosis, cardiac dilatation, hemiplegia, syncopal attacks, emotional episodes, visual disturbances, various forms of neuroses and psychoses, some with marked mental deterioration, ataxia, myalgia, muscular twitching, stiff and painful joints and angina pectoris. This is not the entire list of disorders alleged to be induced by repeated exposure to low concentrations of carbon monoxide but is sufficient in view of the fact that all these disorders are known to occur from other causes, and that in this paper no real evidence is presented that in the cases reported carbon monoxide was involved to any appreciable degree. Such involvement or causation is assumed merely on the basis of blood counts somewhat above normal in some cases and below normal in others: conditions that may also occur apart from carbon monoxide.

It appears that in West Virginia natural gas is extensively used for domestic cooking and heating, that the appliances in which the gas is burned are often without flue connections, and that during cold weather windows are rarely opened either by day or by night. Now natural gas is methane, which is no more poisonous than nitrogen, the chief constituent of air. Natural gas contains no trace of carbon monoxide. With a good supply of air to a flame of methane the gas burns with no production of carbon monoxide. What is produced is heat, water vapor and an atmosphere that is stuffy and unhealthful. No appreciable decrease of oxygen or increase of carbon dioxide in the air of the room so heated is usually involved. If the occupants exhibit poor health, it is fair to assume that bad ventilation may be a factor. But without positive demonstration of the presence of carbon monoxide by analysis of the air or the blood, no inference of "chronic carbon monoxide poisoning" is justifiable. Certainly not to the extent of the varied disorders listed.

The proverbial belief in regard to "chronic carbon monoxide poisoning" had its chief origin in the cases of prolonged asphyxiation by city gas, which were once common but are now rare. The small gas lighting fixtures then used in bedrooms were easily turned on accidentally, and as the small stream of gas flowed into the room the victim was exposed to a gradually increasing concentration of carbon monoxide. Often it was insufficient to cause immediate death by acute asphyxia but was sufficient over many hours to induce lasting damage to the brain. Today carbon monoxide asphyxiation commonly occurs in garages and kitchens and is generally acute and brief. Since the introduction of inhalation resuscitation, the large majority of cases fall into one or other of two classes: that in which the victims die immediately and that in which they recover rapidly and completely. But even in the cases of permanent damage that do still occasionally occur, the term "chronic carbon monoxide poisoning" is a misnomer. Before the patient comes out of coma the last trace of carbon monoxide has been eliminated from his blood. A better term would be permanent postasphyxial myelitis.

The question remains whether repeated exposures to amounts of carbon monoxide only sufficient to induce a headache but falling considerably short of rendering a man unable to stand or drive a car can do more than impair health temporarily. At present the probability is that termination of the unhealthful condition is always rapidly followed by return to health. Certainly the men who drive taxis in our larger cities and those who work in repair shops, although liable to all the disorders mentioned by Dr. Beck and his co-authors, have not yet been shown to be appreciably more liable than the rest of the population. We all breathe some carbon monoxide nearly every day of our lives.

The expression "chronic poisoning" can be properly applied only to the action of substances that are protoplasmic poisons and that may accumulate in the body. Lead is a typical example. Carbon monoxide, on the contrary, is rapidly eliminated by respiration, and its action while in the blood is wholly due to the temporary displacement of oxygen. The anoxia due to carbon monoxide acts essentially as does that induced by the low pressure of the air (i. e. oxygen deficiency) at great altitudes. The headache of mountain sickness and that of a temporary 20 or 30 per cent saturation of the blood with carbon monoxide are identical. Yet, given time for compensatory physiologic adjustments—of which an increase of red corpuscles in the blood is one—men are quite healthy at Denver and even on Pike's Peak.

It would be a valuable service if the board of health in one of our cities would institute an investigation by a gas analyst and a clinician jointly with regard to the amounts of carbon monoxide in the atmosphere in as many automobile repair shops as possible and as to the health and symptoms of disease of the mechanics who work in them. Experiments in this laboratory have shown that in dogs repeated asphyxiations of the severest character—just short of death—are required to induce any considerable impairment of health.

YANDELL HENDERSON, PH.D., New Haven, Conn.

[This letter was referred to Dr. Beck, who replies:]

To the Editor:—The criticism offered by Dr. Yandell Henderson, of our article in *THE JOURNAL*, July 6, affords me an opportunity to discuss some phases of the subject which have been misconstrued.

On some of the most salient points I agree with Dr. Henderson. This is with respect to the use of the term "chronic carbon monoxide poisoning." My associates and I have endeavored to make a clear distinction between what we regard as simple carbon monoxide anoxemia and the more chronic forms with organic changes occurring as residual manifestations of acute asphyxiation or the secondary effects of severe and protracted (chronic) anoxemia.

I have frequently called attention to the fact that the term "chronic carbon monoxide poisoning" was misleading. In an article on slow carbon monoxide asphyxiation in *THE JOURNAL*, Sept. 26, 1936, I made the following statement: "Chronic carbon monoxide anoxemia would designate the true nature of the condition better than 'chronic carbon monoxide poisoning,' as the latter is not only a misnomer but is actually misleading." If Dr. Henderson will read the article carefully in which he criticizes the use of the term "chronic carbon monoxide poisoning," he will not find mention of the words "poison" or "poisoning" or any reference to the term "chronic carbon monoxide poisoning."

However, I have used it in my previously published articles. This was done for the reason that the average physician is not familiar with any other term designating the condition. Moreover, articles on the subject, either in textbooks or in medical journals, invariably appear in the index under the caption "carbon monoxide poisoning." In the *Index of the Surgeon General's Library*, twenty finely printed pages are devoted to the bibliography on carbon monoxide. In eighteen of these pages references are listed specifically under the heading of "Carbon Monoxide Poisoning." The list includes extensive bibliographies under "chronic carbon monoxide poisoning" covering the English, French, German, Italian and Spanish literature. In my observations extending over many years, I discovered nothing new clinically on the subject and failed to find a single phenomenon which had not been previously fully described.

The bibliography on "Carbon Monoxide Poisoning: Manifestations, Mental and Neurological," covers a full page, and the pathology another page. A careful review of the literature furnishes ample evidence that serious damage to such structures as the brain, heart and other organs may result from carbon monoxide gas and that a variety of clinical syndromes naturally develop on such a pathologic-anatomic basis. The underlying pathologic changes occurring in the brain and central nervous system give rise to the many "conditions" which Dr. Henderson states are alleged to be due to carbon monoxide. It is well established that many of the "conditions" referred to—encephalitis, epilepsy, hemiplegia, syncopal attacks, emotional episodes, visual disturbances, neuroses, psychoses, mental deterioration and ataxia—are not disease entities but merely symptoms which, as a composite, express a single encephalitic or encephalomyelitic process.

In our series of 150 cases studied, thirteen exhibited definite signs and symptoms of chronic encephalitis, including practically the entire list mentioned. Here again, in this group of cases, I am somewhat in agreement with Dr. Henderson when he acknowledges that carbon monoxide does produce cerebral lesions and suggests as a better term "permanant postasphyxial myelitis." However, from a careful review of the literature and from our own clinical observations covering a period of twenty years, I would prefer to use the term "carbon monoxide or post-asphyxial encephalitis," and, to make it more inclusive, "encephalomyelitis."

The symptoms referable to the heart can be explained on the same pathologic-anatomic basis, the result of anoxemia. It is difficult to explain without attributing the cause to carbon monoxide why among 150 persons who were unquestionably exposed to the gas over long periods encephalitis occurred in one in every twelve and epilepsy in one in every seventeen patients admitted, when among those not exposed encephalitis occurred in only one in 198 and epilepsy in one in 148. These statistics are compiled from our own clinic records and deserve serious consideration.

As syndromes resulting from the effects of carbon monoxide can best be determined by careful clinical investigation, our approach to the subject has been primarily from the clinical side, and the results obtained have been correlated as far as possible with laboratory studies. The latter, exclusive of the routine urinalysis, blood count and serologic tests, included in selected cases the quantitative determination of carbon monoxide in the air by gas analysis or by the Mines Safety Appliance Company's carbon monoxide indicator.

For the mere detection of gas, palladium chloride was frequently used. The determination of carbon monoxide in the blood was made in some of our cases by the pyrotannic acid method (Sayers and Yant); in others, in which a more accurate quantitative determination was desired, the Van Slyke method was employed.

However, when one considers that the episodes causing the damage have usually occurred from exposures many months or even years before, the diagnostic significance of carbon monoxide in the air or in the blood dwindles to naught in these chronic or residual forms. Many of the cases studied were of years' duration. All the patients gave a history of one or repeated daily exposures with symptoms characteristic of anoxemia and of obtaining relief in fresh air, improvement of heating conditions or change of residence. In those cases presenting residual manifestations a history of anoxemia antedated the onset of symptoms.

Realizing the valuable services a board of health could render in instituting an investigation by a gas analyst and clinician conjointly, we have already taken advantage of the opportunity and concluded an investigation which was even broader in scope but confined largely to the study of the domestic problem. The survey was conducted under a grant provided for the purpose and was sponsored by the Research Committee of the University of West Virginia, aided by such agencies as the public utilities, the State Department of Health of West Virginia, the West Virginia Geological Survey, Cities Service Company of New York and our diagnostic clinic. An analysis of the natural gas from the wells was furnished by the state geological department. The condition of gas consuming appliances, the facilities for proper ventilation and the determination of the amount of carbon monoxide present were investigated by sanitary and gas engineers. Blood examinations for carbon monoxide saturation were made by Mr. Anderson of the Johns Hopkins University, using the Van Slyke method. Electrocardiographic studies were also made. The time of exposure, the length of residence in gas heated homes, the health of the occupants and many other details were included in the survey.

The results, which will be published later, furnish convincing proof of the correctness of our assertion and that we have made no unwarranted claims in stating that carbon monoxide may produce chronic states of ill health in the nature of clinical syndromes such as we have described.

HARVEY G. BECK, M.D., Baltimore.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

LITTLE HAZARD FROM ENAMELWARE

To the Editor:—Have there even been any ill effects reported from the chipped particles of enamel used in surfacing kitchen utensils? This enamelware often chips and I have been asked whether the ingestion of even inconsiderable amounts might prove to be harmful.

M.D., Ohio.

ANSWER.—Formulas for vitreous enamels vary extensively, but in the main the constituents appear to contain metallic silicates. Metallic oxides are employed to impart desired colors such as cobalt for blue, cobalt and manganese for violet, copper and chromium for green. Lead and arsenic formerly enjoyed wide use but for kitchen utensils have to some extent disappeared. Theoretically these enamels contain poisonous ingredients, but practically chemical injuries are not to be anticipated from any proper usage of these utensils or from the ingestion of small flakes of enamelware. High insolubility even in gastrointestinal juices assures comparative safety. Occasional claims are made of mechanical injuries from the cutting or irritating action of enamel flakes much akin to ingested glass fragments. As a rule such claims are without merit. Large scales such as might nick the esophagus are likely to be detected in the mouth. The mass action of a few small particles is so slight as to make harm improbable. The importance formerly attached to this class of foreign bodies in the gastrointestinal tract, and particularly small glass fragments, probably exaggerated the extent of any real harm produced.

AIR INSUFFLATIONS AND OXYGEN FOR TUBERCULOUS COLITIS

To the Editor:—Could you suggest a treatment other than rest, diet and vitamin therapy for a 3 months old tuberculous colitis in a patient with a long-standing but healing pulmonary tuberculosis? It has come to my attention that oxygen or air insufflations have been used in many cases with success. If this is so, could you outline the procedure or give me some references on the subject?

M.D., South Carolina.

ANSWER.—Pneumoperitoneum or oxyperitoneum has been used by many physicians for patients who have tuberculosis of various parts of the digestive tract, including the colon. The air or oxygen may be introduced into the peritoneal cavity by an ordinary artificial pneumothorax apparatus. The needle is introduced approximately two fingerbreadths to the left and 1 inch below the umbilicus. One does not obtain a negative manometer reading as in the pleural cavity; in fact, there usually is no oscillation when the needle first enters the peritoneal cavity. When the needle is introduced slowly through the abdominal wall, some resistance is met until it enters the peritoneal cavity. After the needle is inserted one should draw back on the plunger of the syringe to make sure that the tip of the needle is not in a blood vessel, as gas embolus has occasionally occurred during introduction of air into the peritoneal cavity. From 300 to 500 cc. of air is allowed to flow into the peritoneal cavity. The absorption rate is fast when oxygen is employed, and therefore the treatment should be repeated once or twice each week. Examination of the abdomen with the fluoroscope is a reasonably accurate means of determining when a sufficient amount of air or oxygen is present, and the frequency of refills can therefore be determined in this manner. The treatment may be continued as long as it seems beneficial, as indicated by relief from symptoms. This is not a curative procedure, but many patients state that it gives them considerable relief from symptoms.

It has been suggested that oxygen be introduced directly into the small intestine through a duodenal tube or into the colon through a rectal tube. When this is done great care should be taken to prevent the entrance of too much oxygen at one time, as it may cause severe pain. There is no satisfactory evidence available as to the benefit of such treatment, and therefore it should be discouraged unless further experimental work proves it to be of value.

In 1938 Fine and his co-workers (*Ann. Surg.* 107:1 [Jan.] 1938) showed that the inhalation of 100 per cent oxygen would decompress the distended abdomen after surgical operation within twelve to twenty-four hours. The best results were obtained when the Wangenstein method of suction was employed

in conjunction with the inhalation of oxygen. Fine's work has been confirmed by Boothby (*THE JOURNAL*, Aug. 5, 1939, p. 477), Lovelace (*Minnesota Med.* 22:117 [Feb.] 1939) and Mayo (*West Virginia M. J.* 35:520 [Nov.] 1939). Indeed they, with Bulbulian, have devised special masks which provide for the inhalation of oxygen at any desired percentage up to 100. They have found this of great value following surgery and also in peritonitis. They believe it is also of value in certain infections, particularly those produced by anaerobic organisms. When pure oxygen is inhaled, the oxygen content of arterial blood is increased from 10 to 15 per cent. When the patient inhales 100 per cent oxygen it has been shown that the nitrogen quickly disappears from the lungs, the nitrogen in the blood is eliminated by way of the lungs in a few minutes, that in the tissues is given up to the blood, which in turn throws it off in the lungs, and thus more oxygen is permitted to enter the tissues.

There is no reason to suspect that the inhalation of 100 per cent oxygen has any harmful effect on tubercle bacilli; indeed, they are aerobic. Nevertheless the patient with intestinal tuberculosis may suffer from distention and he may also have peritonitis, and therefore he may be relieved by the Wangenstein suction method plus the administration of 100 per cent oxygen. It has been shown that 100 per cent oxygen may be breathed for forty-eight hours without any evidence of irritation of the lungs. However, beyond this time it is thought best to decrease the concentration. Here, again, one has not a curative but only a palliative measure.

SKELETAL DEMINERALIZATION AND THEELIN (ESTRONE)

To the Editor:—Roentgenologists observe that most people who fracture their hips and bodies of the vertebrae are women past the menopause. The thought comes that the cessation of ovarian function might influence calcium metabolism. If that is true, would a hormone like theelin help in the deposition of lime in the bones?

Philip J. Lukens, M.D., Ambler, Pa.

ANSWER.—There is no well substantiated evidence that theelin is of value in the deposition of lime in the bones of an otherwise normal person either before or after the menopause. Spontaneous fractures of the hips or vertebral bodies are extremely rare and usually secondary to specific bone destructive lesions, such as neoplasms. The fact that fractures of this type in elderly persons are more common in women than in men can probably be explained on the basis that men, on the average, are physically more active than women not only late in life but throughout adult life. There is some evidence that atrophy of the skeleton, which is common in elderly persons and is called by various terms, including senile osteoporosis, results from years of ingestion of diets low in calcium content, from faulty absorption of calcium salts from the gastrointestinal tract, or from the wasting which is always associated with a decrease in the physical activity of the individual. It is quite possible that a combination of these three causes may explain the extreme demineralization of the human skeleton in elderly women, but it is also found not infrequently in elderly men. The actual increase in incidence of fractures in women over the men can be explained best by the fact that women fall much more often, and in falling they are not as adept as men, who have been more active physically, in arresting the fall with their hands.

IS ACETOPHENETIDIN HABIT FORMING?

To the Editor:—I should like to know whether or not there have been any cases reported of addiction to phenacetin. Can this drug be considered a habit forming drug and are there ever "withdrawal symptoms" associated with the discontinuance of this drug after one has taken it a while?

M.D., Georgia.

ANSWER.—The answer depends on one's concept of "drug habit" and "withdrawal symptoms." There are infinite gradations between the "habit" of chewing gum, at one extreme, and heroin addiction at the other. "Withdrawal symptoms" similarly grade insensibly from mild desire and discomfort to intense craving and physical collapse. Most people take acetophenetidin, acetanilid or acetylsalicylic acid only occasionally and for definite indications such as headache, pain or colds. Those who have habitual headache are inclined to take drugs habitually and may develop chronic poisoning, especially cyanosis, but they can stop without marked craving or other withdrawal symptoms. A few individuals appear to feel a positive elation or even inebriation, and these are more likely to use the drugs to excess and to feel the withdrawal more keenly and may object quite vigorously, especially if they have a neurotic or hysterical temperament; but violent reactions are rare and may be charged to inherent nervous irritability more than to these drugs.

MELTING CAPSULES

To the Editor:—In the following prescription used for certain cases of hypertension the patient has had difficulty in preserving the capsules without melting. However, this has been overcome by putting a small amount of absorbent cotton in the container and keeping the capsules in a cool place. The pharmacist informs me that the ingredient responsible for this is calcium iodobenzenate, and the decomposition can be controlled by putting this ingredient inside a separate capsule, which is then placed inside the regular capsule. I would appreciate knowing if this procedure can be eliminated or, if not, do you have any suggestions to make in regard to compounding the mixture without having it decompose? The prescription is as follows: soluble phenobarbital 15 grains (1 Gm.), theophylline with ethylenediamine 60 grains (4 Gm.), calcium iodobenzenate 90 grains (6 Gm.). Mix and divide into 45 capsules.

M.D., West Virginia.

ANSWER:—The softening of the capsules by this prescription mixture might be prevented by the addition of kaolin or powdered althea. These are both inert. Or sodium iodide in a correspondingly smaller amount could be substituted for the calcium iodobenzenate with the same therapeutic results. If the capsules are taken with a full glass of water or after a meal, that quantity of sodium iodide given in a solid form would not be irritating. In any case the capsules should be kept in a cool dry place.

TRAUMA AND MYXOSARCOMA

To the Editor:—Please give me information regarding the possibility of trauma causing, exacerbating or hastening the development of a myxosarcoma of the upper part of the leg in one who uses this portion of his leg in climbing poles and the like. Where might I find authoritative information on this subject? Could an acute minor injury cause a rapid progression of such a growth? The tumor seemed to be in the muscles. Could it possibly be a rhabdomyoma rather than a myxosarcoma?

W. L. Hartman, M.D., South Orange, N. J.

ANSWER:—There is no evidence that trauma can act as the sole causative factor in the development of a myxosarcoma of the upper part of the leg. There have been cases in which the evidence seemed to indicate that trauma has acted as a contributing factor in the development of such a lesion. There is an extensive literature on the relation between trauma and tumors. This can be readily found by reference to the *Quarterly Cumulative Index Medicus*. It is unlikely that an acute minor injury would cause a rapid development of such a growth. As a rule it is not difficult to distinguish microscopically between rhabdomyosarcoma and myxosarcoma.

MAPHARSEN AND LOOSE STOOLS

To the Editor:—I should like to know whether or not the full benefit is obtained from mapharsen by a patient in whom neorarsphenamine causes vomiting and in whom mapharsen causes from one to three or four loose and profuse watery stools. I am afraid I am losing the benefit of the drug, and although I started out using this drug every fourth day, I do not seem to obtain any better results by giving it at weekly intervals. Should I use a smaller dose than 0.06 Gm. for a man weighing 185 pounds (84 Kg.)?

M.D., West Virginia.

ANSWER:—If the patient has vomiting following neorarsphenamine, it probably was wise to change to mapharsen. It is possible that he is slightly arsenic sensitive, but as long as he has nothing worse than three or four loose and profuse watery stools there seems to be no reason why this treatment should not be continued. Probably it would not be wise to use the drug every fourth day, however. Since the man weighs 185 pounds, the dose of 60 mg. given about every five days or once a week for a series of ten injections might be advisable. He might also be given some preparation which would have a tendency to render him a little constive for ten or twelve hours after the injection. It is not felt that the patient is losing the benefit of the drug simply because he has a few loose, watery stools.

COLON AFTER COLOSTOMY

To the Editor:—From several months to several years after a permanent colostomy is performed, what happens to the integrity of the colon as far as function, musculature and size of the lumen are concerned?

M.D., New York.

ANSWER:—There have been no studies reported as to the function and structure of the colon after permanent colostomy, probably because this procedure is performed usually for the relief of obstruction from carcinoma and the patients do not live long enough to allow such detailed observations. One patient, examined a year after colostomy, showed no significant change in the distal colon. A second patient nine years after colostomy likewise had a normal rectum. Operation several years after ileostomy in chronic ulcerative colitis has revealed, in some cases, a narrowing of the large bowel, the lumen being from one fourth to one third its usual size. It is known experimen-

tally that months after permanent colostomy in monkeys there is a distinct atrophy of the distal bowel. Patients with colostomy frequently pass small grayish masses by rectum, doubtless representing accumulations of mucus and epithelial debris. This was noted in a patient eighteen years after a colostomy by Franz (*Ztschr. f. Geburtsh. u. Gynäk.* 85:598, 1923) and apparently mistaken for "recurring tumor." There is no evidence available as to the microscopic structure of the musculature of the colon after permanent colostomy.

DIET OF MOTHER AND FETAL SIZE

To the Editor:—I have never been able to settle to my satisfaction the controversy as to whether restriction of diet during pregnancy will affect the weight of the baby. Will you discuss this? Furthermore, in conjunction with this question, is it possible by any means to govern the size of the unborn baby's head and is it true that the weight of the baby and the size of the baby's body are relatively unimportant since the body follows easily wherever the head can go?

W. A. Dawson, M.D., Dalhart, Texas.

ANSWER:—It is probably true that the consensus of obstetricians is that the bulk of the baby can be limited. This is done by restricting the sugars and starches and some restriction of fluid during the last trimester of pregnancy. Care should be exercised that the actual requirements of a balanced diet are not disturbed. The restriction of food does not affect the length of the baby or the size of its head. These are probably more largely determined by heredity. It is not true that the weight and size of the baby are unimportant, because delivery is often complicated by bulk and excessive size of the bony structure as well as by a large head.

EFFECTS OF CHORIONIC GONADOTROPIN

To the Editor:—Are there any remarkable side effects from the therapeutic use of chorionic gonadotropin in either men or women?

M.D., Idaho.

ANSWER:—Chorionic gonadotropin is the preparation from the urine of pregnant women which is known to stimulate the interstitial cell tissue of the testicles and to cause atresia or a type of atrophy of the ovarian follicles in women. It apparently maintains a corpus luteum after this has once formed in the course of the normal cycle of ovarian activity in women. These fundamental reactions are the basis for its therapeutic use. Except for slight local reactions in some instances there are no other demonstrable effects of such chorionic gonadotropin in human beings. A detailed Council report on this material will be found in *THE JOURNAL*, Feb. 10, 1940, page 487.

INTRAVENOUS DEXTROSE SOLUTION NOT
HARMFUL TO KIDNEYS

To the Editor:—Is there any evidence tending to show that 50 cc. of 50 per cent dextrose injected intravenously would be detrimental to kidneys already seriously impaired?

James T. Quattlebaum, M.D., Columbia, S. C.

ANSWER:—There is no evidence to indicate that 50 cc. of 50 per cent dextrose injected intravenously causes any damage to diseased kidneys. Rapid injection of several times this amount might cause sufficient acute circulatory disturbance to affect renal blood flow, but even this is a rather remote possibility.

PELVIC DIAMETERS

To the Editor:—Where can I find references to correlation between the bicristal and bitrochanteric diameters and body heights? I am particularly interested in articles which will give this information by chronological age. I should like to have information on both male and female pelvis.

M.D., New York.

ANSWER:—Information of this nature exists to some extent but is scattered and has not as yet been summarized. The correspondent should consult references to measurements on the pelvis, and on children and adolescents, in the *Index Catalogue of the Library of the Surgeon General's Office*, U. S. Army, and in the *Quarterly Cumulative Index Medicus*.

"BLINDNESS FROM HEMORRHAGE INTO
OPTIC NERVE"

To the Editor:—With regard to your reply to the query about blindness from hemorrhage into the optic nerve canal (*The Journal*, August 3, p. 404) I have it on the authority of Foster Moore (*Medical Ophthalmology* 1922) that hemorrhage into the sheath of the optic nerve does not cause blindness. A better explanation of this case would be damage to the nerve by a fracture through the optic foramen. In that event the prognosis was bad from the start and evacuation of the blood or any other operation would not have helped.

E. C. Ellett, M.D., Memphis, Tenn.

Medical Examinations and Licensure

COMING EXAMINATIONS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL, August 24, page 636.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: Montgomery, June 17-19. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

ALASKA: Juneau, Sept. 3. Sec., Dr. W. W. Council, Box 561, Juneau.

ARIZONA: *Written.* Phoenix, Oct. 1. *Reciprocity.* Phoenix, Oct. 2. Sec., Dr. J. H. Patterson, 326 Security Bldg., Phoenix.

ARKANSAS: *Regular.* Little Rock, Nov. 7-8. Sec., Dr. D. L. Owens, Harrison. *Eclectic.* Little Rock, Nov. 7. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

CALIFORNIA: *Oral examination* (required when reciprocity application is based on a state certificate or license issued ten or more years before filing application in California), San Francisco, Oct. 2. *Written examination.* Sacramento, Oct. 21-24. Sec., Dr. Charles B. Pinkham, 1020 N St., Sacramento.

COLORADO: Denver, Oct. 1-4. Applications must be on file not later than Sept. 17. Sec., Dr. Harvey W. Snyder, 831 Republic Bldg., Denver.

CONNECTICUT: *Written.* Hartford, Nov. 12-13. *Endorsement.* Hartford, Nov. 26. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden. *Homeopathic.* Derby, Nov. 12-13. Sec., Dr. Joseph H. Evans, 1488 Chapel St., New Haven.

DELAWARE: July 8-10. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA: Washington, Nov. 11-12. Sec., Commission on Licensure, Dr. George C. Ruhland, 203 District Bldg., Washington.

FLORIDA: Tampa, Nov. 18-19. Sec., Dr. W. M. Rowlett, Box 786, Tampa.

GEORGIA: Atlanta, Oct. 8-9. Joint-Sec., State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

HAWAII: Honolulu, Jan. 8-11. Sec., Dr. James A. Morgan, 48 Young Building, Honolulu.

IDAHO: Boise, Oct. 1. Dir., Bureau of Occupational License, Mr. H. B. Whittlessey, 355 State Capitol Bldg., Boise.

ILLINOIS: Chicago, Oct. 1-3. Superintendent of Registration, Mr. Lucien A. File, Springfield.

INDIANA: Indianapolis, June 17-19. Sec., Board of Medical Registration and Examination, Dr. J. W. Bowers, Citizens Trust Building, Fort Wayne.

KANSAS: Topeka, Dec. 10-11. Sec., Dr. J. F. Hassig, 905 N. Seventh St., Kansas City.

KENTUCKY: Louisville, Dec. 3-5. Sec., State Board of Health, Dr. A. T. McCormack, 620 Third St., Louisville.

MAINE: Portland, Nov. 12-13. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: *Medical.* Baltimore, Dec. 10-13. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Homeopathic.* Baltimore, Dec. 10-11. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: Boston, Nov. 12-14. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 413-F State House, Boston.

MICHIGAN: Lansing, Oct. 9-11. Sec., Dr. J. Earl McIntyre, 202-4 Hollister Bldg., Lansing.

MINNESOTA: Minneapolis, Oct. 15-17. Sec., Dr. Julian F. Du Bois, 350 St. Peter St., St. Paul.

MISSISSIPPI: *Reciprocity.* Jackson, December. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MONTANA: Helena, Sept. 30. *Written.* Helena, Oct. 1-2. Sec., Dr. S. A. Cooney, 216 Power Block, Helena.

NEW JERSEY: Trenton, Oct. 15-16. Sec., Dr. Earl S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, Oct. 7-8. Sec., Dr. Le Grand Ward, 135 Sena Plaza, Santa Fe.

NEW YORK: Albany, Buffalo, New York and Syracuse, Sept. 23-26. Chief, Bureau of Professional Examinations, Mr. Herbert J. Hamilton, 315 Education Building, Albany.

NORTH CAROLINA: *Reciprocity.* Durham, Dec. 3. Sec., Dr. W. D. James, Hamlet.

NORTH DAKOTA: Grand Forks, Jan. 7-10. Sec., Dr. G. M. Williamson, 4½ S. Third St., Grand Forks.

OKLAHOMA: Oklahoma City, Dec. 11. Sec., Dr. James D. Osborn Jr., Frederick.

OREGON: *Reciprocity.* Portland, October. *Written.* Portland, Jan. 14-16. Exec. Sec., Miss Lorette M. Conlee, 608 Failing Bldg., Portland.

PENNSYLVANIA: Philadelphia, January. Dir., Bureau of Professional Licensing, 358 Education Bldg., Harrisburg.

PUERTO RICO: San Juan, Sept. 3. Sec., Dr. O. Costa Mandry, Box 3854, Santurce.

RHODE ISLAND: Providence, Oct. 3-4. Sec., Division of Examination, Dr. Robert M. Lord, 366 State Office Bldg., Providence.

SOUTH CAROLINA: Columbia, Nov. 12. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

SOUTH DAKOTA: Pierre, Jan. 21-22. Dir., Medical Licensure, Dr. J. F. D. Cook, Pierre.

TEXAS: Austin, Nov. 25-27. Sec., Dr. T. J. Crowe, 918-920 Mercantile Bldg., Dallas.

VERMONT: Burlington, Feb. 11. Sec., Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, Dec. 4-6. Sec., Dr. J. W. Preston, 30½ Franklin Rd., Roanoke.

WEST VIRGINIA: Morgantown, Oct. 31-Nov. 2. Sec., Public Health Council, Dr. Arthur E. McClue, State Capitol, Charleston.

WISCONSIN: Madison, Jan. 14-17. Sec., Dr. H. W. Shutter, 425 E. Wisconsin Ave., Milwaukee.

WYOMING: Cheyenne, October. Sec., Dr. M. C. Keith, Capitol Building, Cheyenne.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ARIZONA: Tucson, Sept. 17. Sec., Dr. Robert L. Nugent, Science Hall, University of Arizona, Tucson.

COLORADO: Denver, Sept. 16-17. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver.

CONNECTICUT: New Haven, Oct. 12. Chairman, State Board of Healing Arts, Dr. Charles M. Bakewell, 1945 Yale Station, New Haven.

DISTRICT OF COLUMBIA: Washington, Oct. 21-22. Sec., Commission on Licensure, Dr. George C. Ruhland, 203 District Bldg., Washington.

FLORIDA: Gainesville, Nov. 1. Applications must be on file not later than Sept. 16. Sec., Dr. John F. Conn, John B. Stetson University, De Land.

IOWA: Des Moines, Oct. 8. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Building, Des Moines.

MINNESOTA: Minneapolis, Oct. 1-2. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis.

NEBRASKA: Lincoln, Oct. 1-2. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, 1009 State Capitol Bldg., Lincoln.

OREGON: Portland, Oct. 26. Sec., Mr. Charles D. Byrne, State Board of Higher Education, University of Oregon, Eugene.

SOUTH DAKOTA: *Examination.* Yankton, Dec. 6-7. *Endorsement.* Dec. 21. Sec., Dr. Gregg M. Evans, Yankton.

WISCONSIN: Madison, Sept. 21. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.

Mississippi June Report

Dr. R. N. Whitfield, assistant secretary, State Board of Health, reports the written examination for medical licensure held at Jackson, June 26-28, 1940. The examination covered twelve subjects and included ninety-six questions. An average of 75 per cent was required to pass. Forty-two candidates were examined, all of whom passed. Twenty-five physicians were licensed to practice medicine by reciprocity. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
The School of Medicine of the Division of the Biological Sciences.....	(1937)		88
University of Louisville School of Medicine.....	(1940)	83.4	85.7
Tulane University of Louisiana School of Medicine....	(1940)		80.5
		82.9, 84.5, 84.8, 85, 85.4, 85.5, 85.8, 86.2, 86.4, 86.6, 86.8, 87, 87.6, 87.9, 88, 88, 88.5, 88.8, 89, 89.5, 89.5, 89.7, 90.4, 90.6, 91.5	
St. Louis University School of Medicine.....	(1940)		86.3
Jefferson Medical College of "	(1940)		89
University of Tennessee School " "	(1938)		85.7
	(1939), 87.3, 87.4, 88.4, (194		
Vanderbilt University School of Medicine.....	(1940)		85.7
Baylor University College of Medicine.....	(1939)		85.7

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas School of Medicine.....	(1936)		Louisiana,
(1939) Arkansas			
University of Georgia School of Medicine.....	(1934)		Georgia
Northwestern University Medical School.....	(1939)		Wisconsin
State University of Iowa College of Medicine.....	(1927)		Iowa
University of Kansas School of Medicine.....	(1937)		Kansas
Louisiana State University School of Medicine.....	(1936)		Louisiana
Tulane University of Louisiana School of Medicine....	(1924),		
(1934), (1937, 2) Louisiana, (1938) Georgia			
Washington University School of Medicine.....	(1939)		Missouri
University and Bellevue Hospital Medical College....	(1900)		New York
University of Oklahoma School of Medicine.....	(1934)		Oklahoma
University of Tennessee College of Medicine.....	(1931), (1933),		
(1937), (1938, 5) Tennessee			
University of Tennessee Medical Department.....	(1910)		Tennessee
Medical College of Virginia.....	(1932)		N. Carolina

Kentucky June Report

Dr. A. T. McCormack, secretary, State Board of Health of Kentucky, reports the written examination for medical licensure held at Louisville, June 6-8, 1940. The examination covered eleven subjects and included 110 questions. An average of 70 per cent was required to pass. Sixty-eight candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of Louisville School of Medicine.....	(1937)		81,
(1938) 80, (1940) 76, 77, 77, 78, 78, 78, 79, 79, 79, 79, 79, 80, 80, 80, 80, 80, 80, 80, 80, 80, 81, 81, 81, 81, 81, 81, 81, 81, 82, 82, 82, 82, 82, 82, 82, 82, 83, 83, 83, 83, 83, 83, 83, 84, 84, 84, 84, 85, 85, 85, 85			
University of Cincinnati College of Medicine.....	(1939)		85
University of Pennsylvania School of Medicine.....	(1937)		81,
(1940) 84			

Twenty-two physicians were licensed to practice medicine by reciprocity and one physician so licensed by endorsement from February 8 through July 13. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University School of Medicine.....	(1938)		New Jersey
Medical School.....	(1936)		Illinois,
of the Division of the Bio-.....	(1938)		Maine
College of Medicine.....	(1939)		Illinois
College of Medicine.....	(1923), (1933)		Indiana
School of Medicine.....	(1937)		N. Carolina,
University of Louisville School of Medicine.....	(1937)		Tennessee

Tulane University of Louisiana School of Medicine....	(1939)	Louisiana
University of Maryland School of Medicine and College of Physicians and Surgeons.....	(1934)	Maryland
Harvard Medical School.....	(1938)	Connecticut
St. Louis University School of Medicine.....	(1938)	Missouri
Eclectic Medical College, Cincinnati.....	(1939)	Ohio
University of Cincinnati College of Medicine.....	(1940)	Ohio
University of Oklahoma School of Medicine.....	(1936)	Oklahoma
University of Tennessee College of Medicine.....	(1936, 3), (1937), (1939, 2)	Tennessee
SCHOOL LICENSED BY ENDORSEMENT Year Endorsement		
Grad. of		
University of Louisville Medical Department.....	(1917)	U. S. Navy

Book Notices

Tuberculosis of Bone and Joint. By G. R. Girdlestone, M.A., B.M., F.R.C.S., Numfeld Professor of Orthopaedic Surgery, Oxford. Cloth. Price, \$8.75. Pp. 265, with 161 illustrations. New York & London: Oxford University Press, 1940.

Orthopedic surgeons have long been aware of the apparent difference between the course of the average case of bone and joint tuberculosis in the United States and the same disease treated under similar conditions in the British Isles or on the European continent. Some of the orthopedic surgeons may have developed theories which attempt to explain this. This excellent treatise by Girdlestone is the first completely adequate discussion of the general subject of bone and joint tuberculosis, based on an extensive clinical experience and analyzed by a thoroughly competent clinical observer, which has appeared in the modern literature. The author emphasizes the fact that bone and joint tuberculosis in the United States and Canada has been reduced by as much as 75 per cent through enforced pasteurization of milk and the elimination of tuberculous cattle from the dairy herds in these countries. Less effective measures toward public hygiene in the British Isles and on the European continent are probably the explanation for the fact that the incidence of this disease in children continues to be high. There is also a suggestion that the better results obtained in the treatment of bone and joint tuberculosis by bed rest or plaster cast, without the aid of surgery, in the sanatoriums of Europe may be explained by the fact that the majority of these patients are suffering from the bovine type of tuberculosis, while in America today the disease is, in more than 90 per cent of the cases, produced by the human tubercle bacillus. This tends to bear out a statement occasionally made, but without actual data to substantiate it, that the human tubercle bacillus is more virulent and the disease caused by this organism more difficult to treat and control than that caused by the bovine bacillus. More than the average surgeon in the British Isles and in Europe, Girdlestone has utilized the adjunct surgical treatment and in selected cases has found it to be a most valuable aid in the cure of the disease. He states that "the fibrous ankylosis following conservative treatment is seldom permanently safe from recrudescence, and time alone does not bring safety." This is a statement with which the more widely experienced orthopedic surgeons in America will almost unanimously agree. This text and reference book is well illustrated with reproductions of excellent roentgenograms and photographs. The subject matter is subdivided according to the regions of the body most commonly involved. This is a book which can be safely recommended to physicians and surgeons, to medical students and to all those who are interested in the control of tuberculosis of the bones and joints.

The Challenge of Adolescence. By Ira S. Wile, M.S., M.D. Cloth. Price, \$3.50. Pp. 481. New York: Greenberg, Publisher, Inc., 1939.

Many books have been written to serve as textbooks in courses on adolescent psychology, but no volume was written prior to this one with the exception of Stanley Hall's out of date masterpiece which serves to cover the field of adolescence as an important field to the physician and the psychiatrist. While it is true that adolescence blends imperceptibly with childhood and adulthood, the physical changes which accompany it are noticeable and easily defined on the basis of numerous social problems with resultant mental, moral and familial conflicts. Wile has covered this whole aspect of adolescent psychology in modern fashion. The approach is what one would expect when considering the various factors of adolescence. As would be expected, the first chapter is devoted to the explanation and

definition of adolescence. Since adolescence is significant in the physical aspect first of all, and the ancillary problems of sexual adjustment and psychosexual evaluation at the same time, the first five chapters are devoted to an explanation of sex as the adolescent sees it and the physical and psychiatric foundation for various concepts. Going on from there, social conflicts and the intellectual and emotional problems which arise in this period are given careful consideration and culminate in a chapter, of deep significance, on unconscious factors in behavior. Naturally these factors are important only as they affect the adolescent's attitude toward the outside world, so that the remaining chapters are devoted to family influences, companions and recreation, religion and morals, economics and vocation, delinquency and crime and an interpretation of the psychologic changes during youth. This chapter is devoted to an examination of neuroses and psychoses of the adolescent, and the book closes with a discussion of politics and ethics with particular reference to youth movements. All in all, this book is a remarkable contribution to the literature of psychiatry and will give not only the psychiatrist but also the physician who wishes to enlighten himself, as well as teachers and others who have problems of adolescence to deal with, a great deal of insight and understanding of the growing youth.

Fourth Saranac Laboratory Symposium on Silicosis: An Official Transcript of the Fourth Saranac Laboratory Silicosis Symposium Held in Connection with the Trudeau School of Tuberculosis at Saranac Lake, N. Y., June 19 to 23, 1939. Edited by B. E. Kuechle, Vice President and Claims Manager, Employers Mutual Liability Insurance Co., Wausau, Wis. Paper. Price, \$3. Pp. 379, with 4 illustrations. Wausau, Wisconsin, 1939.

Silicosis is here treated broadly. As most of the basic facts of the etiology, pathology, roentgenology and diagnosis of the disease have been presented in previous symposiums, these topics are covered by relatively brief yet adequate reviews. The importance of the degree and type of exposure and individual variation in response is discussed by Cummings. Gardner explains the pathologic process and the relation of tuberculosis to silicosis. Riddell gives a summary of the clinical appearances in simple silicosis and in silicosis complicated by tuberculosis, emphasizing the importance of the infectious process in the causation of symptoms. Pendergrass covers the subject of pulmonary anatomy in healthy and silicotic individuals, with particular attention to the x-ray appearances. There is a paper by Drinker on the technics and interpretation of dust counts and analyses.

This basic groundwork having been established, the symposium goes on to some special considerations. These include the problem of estimating degrees of disability, for which McCann gives a fairly simple, objective method based on the measurement of vital capacity, a general evaluation of the functions of an examining clinic as distinct from the care of industrial injuries, the incidental abnormalities not related to dust exposure found in the lungs of workers, and the pathologic responses to inert dusts and to mixed dusts.

About half of the book is devoted to the discussion of dust hazards in specific industries, special attention being given to silica but other materials also being mentioned. Dolomite mining is stated to be free from the silicosis hazard unless the dolomite is mixed with sandstone, which is an unusual circumstance. While gypsum has no injurious effect of itself and may actually retard the development of silicosis in exposed workers, there are several minor processes in its preparation which may cause difficulty. These are subject to easy control. Conditions in the production of Portland cement are somewhat similar. Heavy dust concentrations are encountered, but few of the materials have sufficient free silica to be dangerous. Other factors also are operative to reduce the hazard. There is no evidence that either finished cement or its raw materials, as encountered in the industry, have any harmful effect on the lung. There is a very considerable hazard in the granite-cutting industry unless adequate exhaust systems are used. Such installations are feasible for most of the work, but some operations remain in which adequate control is very difficult. In foundries there is pronounced variation in the exposure to silica, depending on the nature of the work and on the amount of dust dispersed. In general there is not as much silicosis as might be expected. The control of tuberculosis by prompt diagnosis and isolation of

open cases is emphasized. Silicosis has been fairly common among hard coal miners but can be controlled by certain modifications of the working methods.

The final fourth of the book is given over to discussion of administrative and legal measures to be taken for the control of the disease. This is gone into in such detail that abbreviation here would do an injustice.

As is inevitable in reports of symposiums, there are a number of differences of opinion among the contributors. Some of these are resolved in the discussions, and in most instances supporting data are given which will allow the reader to arrive at a conclusion of his own. Unfortunately, the papers were not adequately edited. Several of them make pretty dull reading, are unnecessarily long and are sometimes ambiguous. There is an index which is fairly good.

Elementary Pathological Histology. By W. G. Barnard, F.R.C.P., Professor of Pathology, University of London, London. Second edition. Cloth. Price, 10s. Pp. 75, with 181 illustrations. London: H. K. Lewis & Co., Ltd., 1940.

This is an atlas of elementary pathologic histology intended for use on the bench when sections are being examined. It consists of well selected and generally excellently executed photomicrographs with a small number of diagrammatic sketches. Brief descriptions are placed on the pages opposite the illustrations. Each subject is ushered in by a concise and lucid introduction. The first thirty-four pages (one half of the whole book) are given to inflammations, to acute infections and to granulomas, seventeen pages to degenerations, to hypertrophy, to hyperplasia and to vascular disturbances, and the remaining eighteen pages to neoplasms. The book has apparently filled a need in England, as proved by the publication of a second edition. It may prove useful in this country for an elementary course in histopathology. However, it would have to be supplemented in many places, because the selection of the material was obviously arbitrary. The atlas may find another field of application in this country because of the requirement of some knowledge of pathology by the different specialty boards. Many specialists who have been away from school and from pathology for years could find in this book a pleasant and painless introduction to the rudiments of pathologic histology. A few critical remarks will not detract from the value of this, on the whole, well constructed book. One might question the definition of an abscess as a "localized focus of inflammation in the substance of a tissue or organ." One would hardly offer such a definition to a student. Several errors crept in, as "xanthoproteic reaction" and "the cells between these two positions are almost severely affected," both on page 47, or in the index, where hemosiderin is referred to page 18 instead of to page 10. The American student will have to use the term "giant cell tumor" instead of "osteoclastoma (myeloid sarcoma)" (fig. 144) if he expects to be understood by his fellow students, and chorion-epithelioma is also better known here than chorioncarcinoma. In view of the fine illustrations and the high quality of the paper and of the binding the price of the book is surprisingly low.

A Study of Experimental Tissue Reactions Following Intravenous Injections of Silica and Other Dusts. By F. W. Simson, M.B., Ch.B., and A. Sutherland Strachan, M.A., B.Sc., M.D. From the Department of Pathology, the South African Institute for Medical Research, Johannesburg. Publications of the South African Institute for Medical Research, No. XLV, Vol. IX. Edited by the Director. Paper. Pp. 95-122, with 25 plates. Johannesburg: The Institute, 1940.

Rabbits were given repeated ear vein injections of saline and aqueous suspensions of exceedingly fine quartz, Rand mine dust, sillimanite, orthoclase, muscovite, rutile, glass and mixtures of mine dust and coal. The total doses varied in animals that did not die prematurely between 60 and 360 mg. of material. The period of observation was likewise variable but for each dust some animals survived well over a year.

The authors note the occurrence of silica shock incident to injecting fine quartz and attribute it to change in the normal hydrogen concentration of the blood serum.

They note the development of typical silicotic lesions in the spleen, liver, lymph nodes and bone marrow on injecting quartz and mine dust and the inert type of reaction caused by the other pure minerals, thus confirming observations made in the Saranac Laboratory, where this method originated. They discovered

lesions in the kidneys, pancreas and adrenal glands which the reviewer has not encountered in examining scores of rabbits similarly treated. It is possible that the renal lesions may have been due to the chronic nephritis so common in rabbits; or possibly the high frequency of intercurrent infections (fourteen out of forty-nine rabbits) may have been responsible for these changes and the ones described elsewhere. The reviewer would question the conclusion that this group of changes constitutes evidence of poisoning resulting from circulating soluble silica, since he has failed to observe such changes in rabbits injected with many doses of different sized silica particles.

The absence of pulmonary reaction in animals injected with such fine particles (from 67 to 86 per cent of them 0.8 micron or less in diameter) is a cause for comment, but the reviewer has shown that such fine particles are mechanically carried through the pulmonary capillaries and but few are retained in the lungs. Only when the particles are in excess of 10 microns are many of them held in this organ. The fineness of the dust particles also explains the high frequency of silica shock and the tendency of the silica injections to cause early death. They consider the question of individual susceptibility but conclude that it is not a factor, as all animals show silica reactions in some organs. However, it should be pointed out that the doses of such very active sized particles as they have used are too great to expect differences in reaction from possible differences in individual susceptibility. They note the similarity of the splenic lesions to those in Banti's disease and suggest that in each condition absorption of toxic substances from the liver may be the cause. They fail to emphasize, however, that in the silica animals the spleens are themselves the site of many specific silicotic lesions. They call attention to the "proliferation" and "dedifferentiation" of bile duct epithelium that are so common in advanced silicotic cirrhosis of the rabbit liver and rightly emphasize the subsequent absence of a malignant condition.

Die angioarchitektonische areale Gliederung der Grosshirnrinde auf Grund vollkommener Gefässinjektionspräparate vom Gehirn des Macacus rhesus anatomisch dargestellt. Von Dr. phil. et med. Richard Arwed Pfeifer, Professor der Hirnforschung an der Universität Leipzig. Paper. Price, 38 marks. Pp. 352, with 293 illustrations. Leipzig: Georg Thieme, 1940.

This is a profusely illustrated monograph concerning the angio-architectonics of the cerebral cortex of *Macacus rhesus*. The preparations were made by the author's injection method. The author maintains that angio-architectonics is now an autonomous discipline comparable to cytoarchitectonics and myelo-architectonics. On the basis of his studies Pfeifer has prepared an elaborate map of the cerebral cortex of the macaque and gives detailed photographs of the vascular pattern of the most important areas. The differences in vascularization are sometimes obvious; in other cases considerable imagination is necessary to see the boundaries. One wonders what results the author would have arrived at if he had had no cyto-architectonic maps before him. The fields outlined are not identical with those of Brodmann but the general correspondence is striking. It would serve no purpose to go into detail concerning the topographic results of this study. The book is of no use to the practitioner of medicine. Its appeal will be to a small group of students of the cerebral cortex, to whom this careful and detailed work with its numerous excellent plates will be of great interest.

Sir Thomas Roddick: His Work in Medicine and Public Life. By H. E. MacDermot, M.D. Cloth. Price, \$2. Pp. 160, with 12 illustrations. New York & Toronto: Macmillan Company, 1938.

The mention of the name Roddick, especially in medical circles in Canada, immediately brings to mind one event documented in the annals of Canadian statutes as the Roddick bill, an act of Parliament which provided for the Medical Council of Canada. One would have to understand a good deal about the Canadian constitution with its British North America act and provincial autonomy to appreciate the full significance of Dr. Roddick's achievement, because it was an achievement, largely of one man, to persuade the authorities to carry this act into effect; and Dr. Roddick will always be remembered north of the forty-ninth parallel of latitude for this accomplishment. Dr. MacDermot in this little volume tells the story simply but

involved palms also gives a glance at Roddick the man, Roddick 90, prudent, with his quaint sense of humor. We are then introduced to Roddick the professional man of keen insight and ability. One who likes biography which presents in stereoscopic fashion the various facets which go to make up an unusual man, written in a style which is easy to read, will enjoy this book.

Transition Years: The Modern Approach to "the Change" in Womanhood. By Joseph Rety, M.D. Cloth. Price, \$1.75. Pp. 168, with one illustration. New York: Greenberg, Publisher, Inc., 1940.

This excellent book reveals the author as one who has a real clinical knowledge of the problem he is discussing. The simple, even homely, style is peculiarly well adapted to the group for which it is written; i. e., the present generation of middle-aged women, most of whom have had little or no reliable information in this field. Each chapter contains elementary yet adequate material to clarify its meaning. Substitution of "uterus" for "womb" might be suggested as an additional educational feature. The chapter on the ductless glands is well handled. The discussion of the "change," the description of the many symptoms of the climacteric, both physical and psychologic, the recommended daily routine, the relationship of the climacteric and sexual life, the admonitions to husbands and the final chapter addressed to widows and spinsters all paint a picture which only a physician of wide experience and clear perception could do so well.

Pathological Histology. By Robertson F. Ogilvie, M.D., F.R.C.P., Senior Pathologist, Royal Infirmary, Edinburgh. Foreword by A. Murray Drennan, M.D., F.R.C.P., Professor of Pathology, University of Edinburgh. Cloth. Price, \$8.50. Pp. 332, with 220 photomicrographs in color by T. C. Dodds, F.R.P.S., F.I.B.P., Senior Technician, Pathology Department, University of Edinburgh. Baltimore: William Wood & Company, 1940.

The principal feature of this small volume is the illustration of its text by 220 photomicrographs in color. It is in fact an atlas of histopathology and is intended to be supplementary to a standard textbook. The text is rather brief and is limited mainly to histologic descriptions. Most of the illustrations are good and will be helpful in teaching histopathology. The illustrations of blood cells, however, do not show nuclear structure clearly and are inferior to good drawings. Photomicrographs in color have the advantage that they resemble the stained section closely, yet they usually do not show the details of structure as sharply as good photomicrographs in black and white. This work will prove useful as a supplementary textbook.

Penny Marsh, Supervisor of Public Health Nurses. By Dorothy Deming, R.N. Cloth. Price, \$2. Pp. 303, with 9 illustrations by Dorothea Warren. New York: Dodd, Mead & Company, 1939.

This is a sequel to the volume "Penny Marsh: Public Health Nurse." It details the further adventures of Penelope Marsh, R.N., in the field of public health nursing and describes her experience and life as a supervisor. It is interestingly written and the information on public health nursing problems is cleverly interspersed between adventure and a love interest. The book can be recommended for the seniors in high school and for the young women in college as a part of the vocational guidance library.

Selected Writings of Sir Charles Sherrington: A Testimonial Presented by the Neurologists Forming the Guarantors of the Journal BRAIN. Compiled and edited by D. Denny-Brown. Cloth. Price, \$7.50. Pp. 532, with 86 illustrations. New York: Paul B. Hoeber, Inc., 1940.

This book was published by the guarantors of the journal *Brain*, themselves neurologists and physiologists, because they wished to make some of Sherrington's reprints and extracts of his published papers more readily available for those interested in biologic, physiologic and clinical medical sciences. In this excellent compilation one will find the original descriptions of the spinal animal, the experimental isolation of skin and muscle segmentation, observations on reflexes and their interaction, the motor representation in the primate cortex and the fundamental proof of reciprocal innervation and postural reflexes. The conception of central inhibition is also discussed. This book is

highly recommended to the neurologist, physiologist and psychologist. It will serve as an excellent reference manual for all of Sherrington's contributions.

Workers' Health Hazards—Today and Tomorrow. Detection and Control of Silicosis and Other Occupational Diseases. What New York State has done and the Job Ahead. A Progress Report to the Legislature of the State of New York Submitted by Frieda S. Miller, Industrial Commissioner. Paper. Pp. 31, with illustrations. New York: Department of Labor, 1940.

This brochure is a progress report addressed in popular language to the state legislators on the activities in the field of health protection of workers, undertaken by the Division of Industrial Hygiene of the New York State Department of Labor. For technical discussions of actual work performed, other scientific reports and statements of this agency should be consulted.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Workmen's Compensation Acts: Cancer of Pancreas Allegedly Due to Trauma.—When the blade of a road grader which he was operating or helping to operate for Wayne County, Neb., struck a telephone line anchor on Sept. 22, 1936, Lessman allegedly was struck on the chest by a crank handle and on the right thigh and hip by another lever. He was thrown from the grader but was able to climb back on and continue his work. He made no complaint of his injury to any one except his wife until six months later. According to his wife, when he arrived home from work on the day of the accident he complained of injuries to his right knee and hip and to his chest, on which was visible a "bruised mark" in the region of the right nipple. In March 1937 he consulted an osteopath who treated him for pleurisy and strapped his hip and lower part of his pelvis. In the early part of November 1937 he filed a claim for compensation under the workmen's compensation act of Nebraska. During the latter part of that month he became jaundiced. In December, fifteen months after the accident, he died. An autopsy revealed that the cause of death was carcinoma of the head of the pancreas. Lessman's widow was then substituted as claimant. She contended that Lessman's death from cancer of the pancreas had been caused by the accident. The compensation court found to the contrary and denied compensation, but on a rehearing it reversed its decision and awarded compensation. From a judgment of the district court, Wayne County, affirming that award, the defendants, Wayne County and its insurance carrier, appealed to the Supreme Court of Nebraska.

A medical witness for the defendants testified that there is grave doubt whether trauma has any influence on the development of cancer; that it would be extremely difficult for the head of the pancreas, because of its location, to be injured by trauma and that a blow sufficiently severe to drive the abdominal wall back so far that it might reach the head of the pancreas would more likely injure other organs, such as the stomach and liver. Another medical witness for the defendants, a pathologist who had done research work on cancer, testified that he was not entirely convinced that a blow or trauma will cause cancer although in some cases "acute trauma" occasionally appeared to play a causative part, and that in all his experience he had never seen a case of cancer due to trauma. These medical witnesses testified that a blow of sufficient severity to injure the pancreas would cause the person to suffer a shock such as having his breath knocked out, intense pain, rigidity of the muscles, nausea and vomiting and would render him unable to continue his work.

The evidence, said the Supreme Court, was conflicting as to whether Lessman sustained an accidental injury on Sept. 22, 1936. Assuming that an accident did occur at or about that time, it was impossible for the alleged injuries to Lessman's chest under the right nipple and to the right knee and hip to have also caused an injury to the pancreas. The medical testi-

mony showed that if that organ had been he would have suffered, among other things, vomiting and could not have immediately back on the grader and continued to work without complaint. If, continued the court, contrary to the evidence, it is assumed for purposes of argument that in some unknown manner Lessman's pancreas was slightly injured, it is highly speculative whether such injury produced or in any way affected the carcinoma from which he died. From the evidence it appeared that no cancer has ever been deliberately produced experimentally by trauma. Although severe injuries to the human body have been followed by "cancer" at the point of injury, the tumor involved has usually been the "violently malignant form of sarcoma." Even in these cases medical authorities are sharply divided as to whether such injuries simply reveal and accelerate the growth of a "cancer" already present or actually cause the sarcoma itself. In the judgment of the court the evidence failed to show with reasonable certainty that Lessman's death had been caused by an accidental injury in the course of his employment. Awards of compensation, said the court, cannot be based on mere speculation, possibilities or probabilities. Accordingly, the judgment of the district court upholding the award of compensation was reversed.—*Wayne County v. Lessman (Neb.)*, 285 N. W. 579.

Malpractice: Liability of Hospital for Negligence of Intern and Nurse.—The plaintiff was a pay patient in the hospital operated for profit by the defendant, the Stuart Circle Hospital Corporation. As a part of its business the hospital undertook, through nurses and interns employed by it, to give the plaintiff nursing service and medical treatment. Preparatory to the taking of roentgenograms of the plaintiff's gallbladder an intern, on the written order of the plaintiff's attending physician, attempted to administer an intravenous injection of a dye solution consisting of from 50 to 60 per cent free iodine, a caustic substance which if injected outside of the vein "will seriously burn human tissue." The intern injected approximately 17 cc. of the solution outside of the vein into the surrounding tissue in the plaintiff's right arm with the result that she suffered pain and her right elbow became stiffened. At the attending physician's direction a graduate nurse employed by the hospital applied to the plaintiff's right arm a hot compress over which she placed "surgical wax" and a hot water bottle wrapped in a bath towel. One and one-half hours later a student nurse discovered that the plaintiff's arm was very red. Due to either excessive heat from the hot compress or too long a period of application, or both, the plaintiff received "considerable first and slightly second degree burns" on her upper forearm with subsequent scarring. As the result of the injection of the dye solution she became practically an invalid with a partial sensory paralysis of her right radial nerve, a "thirty degree disability" in the use of her right arm, loss of the use of two fingers and the thumb of her right hand, insomnia and excessive nervousness. She brought suit against the defendant corporation for malpractice and from a judgment in her favor for \$13,000 the defendant brought error to the Supreme Court of Appeals of Virginia.

The defendant contended that under the medical practice act of Virginia, which prohibits the practice of medicine by any one except a licensed physician, a hospital is not permitted to practice medicine, that it cannot make a valid contract to render medical services which involve the exercise of professional skill and judgment and so it cannot be held liable for a breach of such a contract or for damages due to negligence of one of its interns while performing an act requiring the exercise of such skill and judgment. However, the medical practice act provides that nothing therein shall be construed "to affect or interfere in any way with the operation of any hospital . . . if there be a licensed practitioner resident or practicing therein." While this exemption, said the Supreme Court of Appeals, does not permit a hospital to engage in the practice of medicine within the intent of the broad statutory meaning of that term, it does authorize such institutions to engage in so much of the practice of medicine as enables it to render to its patients such necessary routine medical care and attention as is customarily engaged in by hospitals in the proper conduct of their businesses.

The implied contract on the part of the hospital corporation, continued the court, to undertake for compensation to render

to the plaintiff through its agents or employees which the routine medical treatment and nursing services of which condition might require was neither illegal nor ultra vires. The contract was not to furnish a competent and skilled physician but an intern whose relationship with the hospital was different from that of the patient's attending physician or of the members of the hospital staff. A hospital is not responsible for the acts of an attending physician whether he is a member of its staff or an outsider except when by special contract it has assumed such responsibility, because he is an independent contractor and is subject to no control by the hospital in the exercise of his professional skill and judgment. An intern, on the other hand, is not an independent contractor but is selected, employed, directed, supervised and paid by the hospital. He does not hold himself out as practicing medicine and does not have patients of his own. While the duties and functions of a nurse and an intern may vary, there is no substantial difference in their relationship to the patient in the hospital, and they both act as servants or agents of their employer, the hospital. The court concluded, therefore, that a private hospital operated for profit and held out to the public as furnishing to its patients medical and nursing services is responsible to a patient for the negligent acts of its intern and nurse employed by it and acting under its supervision and control, in the performance of their routine duties.

In the judgment of the court the evidence adduced was sufficient to justify the trial court's finding that both the intern and the nurse had been negligent. In its opinion the verdict for \$13,000 was not excessive because the plaintiff's injuries were serious and the medical witnesses were unable to forecast whether or not her physical and "neurotic condition" would improve. Accordingly, the judgment of the trial court in favor of the plaintiff was affirmed.—*Stuart Circle Hospital Corporation v. Curry (Va.)*, 3 S. E. (2d) 153.

Society Proceedings

COMING MEETINGS

- American Academy of Ophthalmology and Oto-Laryngology, Cleveland, Oct. 6-11. Dr. William P. Wherry, 107 South 17th St., Omaha, Secretary.
- American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Excelsior Springs, Mo., Sept. 26-28. Dr. James R. Bloss, 418 Eleventh St., Huntington, W. Va., Secretary.
- American Association of Railway Surgeons, Chicago, Sept. 16-18. Dr. Daniel B. Moss, 547 West Jackson Blvd., Chicago, Secretary.
- American Congress of Physical Therapy, Cleveland, Sept. 2-6. Dr. Richard Kovacs, 2 East 88th St., New York, Secretary.
- American Hospital Association, Boston, Sept. 16-20. Dr. Bert W. Caldwell, 18 East Division St., Chicago, Executive Secretary.
- American Public Health Association, Detroit, Oct. 8-11. Dr. Reginald M. Atwater, 50 West 50th St., New York, Executive Secretary.
- American Roentgen Ray Society, Boston, Sept. 26-Oct. 4. Dr. Carleton B. Pearce, Royal Victoria Hospital, Montreal, Canada, Secretary.
- American Society of Anesthetists, New York, Oct. 10. Dr. Paul M. Wood, 745 Fifth Avenue, New York, Secretary.
- Association of Military Surgeons of the United States, Cleveland, Oct. 10-12. Dr. H. L. Gilchrist, Army Medical Museum, Washington, D. C., Secretary.
- Clinical Orthopaedic Society, Milwaukee and Madison, Wis., Oct. 18-19. Dr. Myron O. Henry, 825 Nicollet Ave., Minneapolis, Secretary.
- Colorado State Medical Society, Glenwood Springs, Sept. 11-14. Mr. Harvey T. Sethman, 537 Republic Bldg., Denver, Executive Secretary.
- Delaware Medical Society of, Rehoboth Beach, Sept. 9-11. Dr. C. L. Munson, 1015 Washington St., Wilmington, Secretary.
- District of Columbia, Medical Society of the, Washington, Oct. 15-17. Mr. Theodore Wiprud, 1718 M St., N.W., Washington, Secretary.
- Idaho State Medical Association, Sun Valley, Sept. 11-14. Dr. J. N. Davis, 204 Fourth Ave., East, Twin Falls, Secretary.
- Inter-State Postgraduate Medical Association of North America, Cleveland, Oct. 14-18. Dr. W. B. Peck, 27 East Stephenson St., Freeport, Ill., Managing Director.
- Kentucky State Medical Association, Lexington, Sept. 16-19. Dr. A. T. McCormack, 620 South Third St., Louisville, Secretary.
- Michigan State Medical Society, Detroit, Sept. 24-27. Dr. L. Fernald Foster, 2020 Olds Tower, Lansing, Secretary.
- Mississippi Valley Medical Society, Rock Island, Ill., Sept. 25-27. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.
- Nevada State Medical Association, Las Vegas, Oct. 11-12. Dr. Horace J. Brown, 120 North Virginia St., Reno, Secretary.
- Oregon State Medical Society, Eugene, Sept. 4-7. Dr. Morris L. Bridgeman, 1020 S.W. Taylor St., Portland, Secretary.
- Pacific Association of Railway Surgeons, Reno, Nev., Sept. 20-21. Dr. W. T. Cummins, 1400 Fell St., San Francisco, Secretary.
- Pennsylvania, Medical Society of the State of, Philadelphia, Sept. 30-Oct. 3. Dr. Walter F. Donaldson, 500 Penn Ave., Pittsburgh, Secretary.
- Vermont State Medical Society, Rutland, Oct. 9-10. Dr. B. F. Cook, 154 Bellevue Ave., Rutland, Secretary.
- Wisconsin, State Medical Society of, Milwaukee, Sept. 18-20. Mr. J. G. Crownhart, 110 East Main St., Madison, Secretary.

involved palmar fascia. The result has been satisfactory in about 90 per cent of the cases. Subcutaneous section of the constricting bands of palmar fascia is a satisfactory method of treatment in certain cases. A carefully managed program of physical therapy is necessary. A combination of excision, splinting and physical therapy results in a useful functioning extremity.

Acute Appendicitis.—King reviews a series of cases of appendicitis observed at the Binghamton City Hospital during the years 1934-1937 inclusive and during the year 1929-1930. During the four years 1934-1937, 1,628 patients were operated on primarily for appendicitis. There were 824 chronic cases and 804 acute cases. The author points out that the fact that appendicitis mortality as reflected from the surveys by insurance companies and from the United States Bureau of Census showed a definite downward trend in the past ten years is not borne out in this series; all this despite the fact that the incidence of early and more favorable cases has been steadily increasing. The mortality rate among the cases complicated by peritonitis has failed to improve. Acute uncomplicated appendicitis had a mortality rate of 0.34 per cent, a figure which is almost irreducible. Appendical abscess had a mortality rate of 14.3 per cent, which is too high. A short but representative experience with bacteriophage in the treatment of ruptured appendicitis indicates that it may be a valuable adjunct in the treatment of these difficult cases. Improvement in appendicitis mortality, which is improvement in peritonitis mortality, calls for a revision of the present methods of treatment and the introduction of such new features as have been tried and proved superior. The key to lowering of the mortality from appendicitis lies in reducing the incidence of peritonitis.

Anesthesiology, New York

1:1-120 (July) 1940

- Place of the Anesthetist in American Medicine. H. W. Haggard, New Haven, Conn.—p. 1.
- Cyclopropane Anesthesia. A. E. Guedel, Los Angeles.—p. 13.
- Abdominal Relaxation with Combined Regional and Cyclopropane Anesthesia. C. F. McCuskey, Glendale, Calif.—p. 26.
- Cyclopropane-Air-Oxygen Anesthesia: Preliminary Report. H. B. Haas, H. J. Hibshman and F. T. Romberger, Lafayette, Ind.—p. 31.
- Role of Liver and Kidneys from the Standpoint of the Anesthetist. L. H. Mousel and J. S. Lundy, Rochester, Minn.—p. 40.
- Convulsions During Anesthesia: Experimental Analysis of Role of Hyperthermia and Respiratory Acidosis. W. H. Cassels, T. J. Becker and M. H. Seevers, Madison, Wis.—p. 56.
- Local Anesthetic Properties of Ephedrine Hydrochloride. F. H. Schultz, New Haven, Conn.—p. 69.
- Prevention and Treatment of Postoperative Pulmonary Complications, with Special Reference to Suction Bronchoscopy. U. H. Eversole, Boston.—p. 72.
- Changes in Velocity of Blood Flow During Spinal Anesthesia. E. A. Doud and E. A. Rovenstine, New York.—p. 82.
- Studies on Early Postoperative Reduction of Prothrombin in Jaundiced and Biliary Fistula Patient, with Special Reference to Anesthesia. J. G. Allen and Huberta Livingston, Chicago.—p. 89.
- Treatment of Aphonia by Intravenous Administration of Pentothal Sodium. L. H. Gold and M. L. Garofalo, Hartford, Conn.—p. 94.

Archives of Otolaryngology, Chicago

32:1-194 (July) 1940

- Artificial Fistula in Cases of Otosclerosis. L. K. Guggenheim and P. Guggenheim, Los Angeles.—p. 1.
- Gangrene and Infection of Ear, Nose and Throat Complicating Diabetes Mellitus: Review of Clinical Manifestations with Surgical Considerations and Report of Case. S. A. Goldberg, Philadelphia.—p. 16.
- Developmental Extension of Anterior Ethmoid Cell Within Frontal Sinus: Report of Case. H. I. Lillie and K. M. Simonton, Rochester, Minn.—p. 32.
- Necropias Involving Middle Ear. H. Rosenwasser, New York.—p. 38.
- Intratracheal Conditions in Relation to Rhinology and Otolary: Critical Survey of Recent Literature. W. P. Eagleton, Newark, N. J.—p. 54.
- Tumors of the Nose and Throat. G. B. New and J. B. Erich, Rochester, Minn.—p. 125.
- Plastic Surgery, 1939. R. H. Ivy and H. A. Miller, Philadelphia.—p. 159.

Iowa State Medical Society Journal, Des Moines

30:273-380 (July) 1940

- Problems and Aims of Profession of Medicine. A. McMahon, St. Louis.—p. 273.
- Ectopic Pregnancy. A. W. Brown, Des Moines.—p. 280.
- Diagnosis and Treatment of Appendicitis. G. M. Crabbs, Mason City.—p. 284.

Journal-Lancet, Minneapolis

60:291-338 (July) 1940

- The Administration of School Health and Physical Education as an Integrated Unit. S. U. Lawton, New York.—p. 310.
- Roentgen Analysis of Pelvis in Pregnancy, with Some Observations on Technic. C. N. Borman, Minneapolis.—p. 312.
- The Common Cold: Evaluation of Oral Vaccine Based on Controlled Study. C. I. Stafford, Oxford, Ohio.—p. 319.
- The Cooperation of the Health Service and the Physical Education Department. D. F. Smiley, Ithaca, N. Y.—p. 325.
- White Flies in Europe. A. S. Rider, Flandreau, S. D.—p. 327.
- Experimental Studies of Some Comparative Nutritional Values of Homogenized and Strained Vegetables. J. Giblin, J. A. Killian and Katherine L. Eyerly, New York.—p. 329.

Journal of Pediatrics, St. Louis

17:1-142 (July) 1940

- *Treatment of Acute Stomatitis. C. H. Smith, New York, and H. B. Johnson, Kingston, N. Y.—p. 1.
- Disturbance of Osseous and Lipid Metabolism in Child with Primary Carcinoma of Liver. A. E. Hansen, Mildred R. Ziegler and I. McQuarrie, Minneapolis.—p. 9.
- Treatment of Acute Staphylococcal Infections with Sulfamethylthiazole. D. Weisman and H. Russell, White Plains, N. Y.—p. 31.
- Methemoglobinemia Following Sulfanilamide and Sulfapyridine Therapy in Infants and Children. B. W. Carey and J. L. Wilson, Detroit.—p. 38.
- Clinical Study of the Weltmann Serum Coagulation Reaction. Susan Coons Dees, Minneapolis.—p. 44.
- Experimental Study of the Weltmann Serum Coagulation Reaction. Susan Coons Dees, Minneapolis.—p. 53.
- *Prevention of Rickets in Premature Infants with Parenteral Administration of Single Massive Doses of Vitamin D. C. Zelson, New York.—p. 73.
- Use of Soybean Emulsion in Simplified Regimen for Study and Treatment of Infantile Eczema. S. J. Levin, Detroit.—p. 79.
- Prevention of Measles in a Boys' Camp Through Use of Immune Globulin (Measles Antibody). E. Denhoff, Boston.—p. 86.
- Pneumococcal Peritonitis in Nephrotic and Non-Nephrotic Children: Comparative Clinical and Pathologic Study with Brief Review of the Literature. M. Pahmer, New York.—p. 90.

Acute Stomatitis.—Smith and Johnson used chromic acid in local treatment of gingivostomatitis for twenty years. The gums and ulcers are dried carefully with a swab and another swab is dipped into the chromic acid solution (from 5 to 7 per cent in water) and applied directly to the ulcers and inflamed gums. Some of the solution is gently worked in between the gums and the teeth. The general treatment is that of any febrile illness. Chromic acid has a definite analgesic effect. The application causes little or no pain. Patients can eat with more comfort for several hours after a treatment. The inflammation of the gums begins to improve after two or three treatments (two a day) and in from forty-eight to seventy-two hours there is a distinct change. The records of the Children's Medical Service at Bellevue Hospital show about twenty cases a year. Sixty-eight of the old cases were selected for analysis. Boys and girls between the ages of 1 to 3 years were equally affected. Thirty-six were treated with chromic acid and thirty-two with perborate or gentian violet. The total duration of the disease was roughly the same in the two groups, about thirteen days. But the duration of the disease after starting chromic acid treatment averaged about two days (seven and a half as compared to nine and a half) less than in patients treated otherwise. Twelve patients with gingivostomatitis were treated more systematically; six had symptoms from one to two days before treatment was begun and they were improved in from twenty-four to forty-eight hours and practically well in about four days. The time necessary for a complete return to normal depends on the duration of the disease before the treatment is started. In several private patients, in whom treatment was begun as soon as the gum margins became red and isolated ulcers appeared, the mouth healed in three or four days.

Prevention of Rickets in Premature Infants.—Zelson gave single massive doses of various vitamin D preparations to forty-six premature infants. Twenty infants were given a single parenteral dose of 600,000 units of crystalline vitamin D₂ or D₃ in 0.7 cc. of peanut oil and 0.3 cc. of ether. The others received a single oral dose of from 200,000 to 500,000 units of another preparation. No signs of toxicity or calcium casts in the urine followed the administration of these massive doses. Local infiltrations at the site of the intramuscular injection of vitamin D did not occur. Only seventeen infants were

followed up for from forty-four to 279 days. The others, after discharge from the hospital, did not return or could be followed only for a shorter period. Rickets appeared in only one. The others did not show any clinical, x-ray or chemical sign of rickets up to the time of the last examination. From the evidence it seems reasonable to assume that rickets in premature infants can be prevented for three months by the parenteral administration, although not necessarily by the oral administration, of one single dose of 600,000 units of vitamin D. The definite need for prophylactic doses of vitamin D probably varies with the individual child, depending on term and season of birth, race, constitution, diet, social factors and geographic and climatic conditions. The dose must be adapted to the infant. Premature infants need the first dose approximately in the third week of life. It should be repeated three months later. Subsequently, premature infants resemble infants born at term in their vitamin D requirement. The highest incidence of rickets occurs in the first winter of life. To secure complete protection two doses, one in October and one in January, are generally advocated. This is repeated in the second winter of life, and in the third winter one preventive dose in December might suffice.

Medical Annals of District of Columbia, Washington

9:227-260 (July) 1940

- Value of Sympathetic Interruption Following Surgical Repair of Peripheral Aneurysms. J. R. Veal, Washington.—p. 227.
Prolonged Relief of Perineal Pain Following Episiotomy: Preliminary Report. J. B. Sheffery, Washington.—p. 231.
Evaluation of Private Serologic Laboratories by Municipal or State Agencies. H. H. Hazen, Washington.—p. 234.
Spontaneous Rupture of Aneurysm of Iliac Artery Successfully Treated Surgically. W. M. Yater and S. J. Sugar, Washington.—p. 237.
Ménière's Syndrome: Report of Two Cases Treated with Histamine Administered Intravenously. D. W. Ingham, Washington.—p. 241.

New England Journal of Medicine, Boston

223:45-84 (July 11) 1940

- Cesarean Section in Massachusetts in 1938. R. L. DeNormandie, Boston.—p. 45.
Hiatus Hernia Simulating Cardiac Infarction: Report of Case. W. D. Reid, Newton, Mass.—p. 50.
Large Adenofibroma of the Breast: Report of Case. F. S. Hopkins, Springfield, Mass.—p. 53.
Treatment of Appendicitis at the Burbank Hospital, Fitchburg, Mass. E. A. Adams, Fitchburg, Mass.—p. 55.
Communicable Diseases: Cardiovascular Disease in Diphtheria. C. Wesselhoeft, Boston.—p. 57.

New Orleans Medical and Surgical Journal

93:1-60 (July) 1940

- Sixty Years of Service and Progress in the Louisiana State Medical Society. R. Matas, New Orleans.—p. 1.
Liver Diseases: Etiology and Pathogenesis. W. H. Harris, New Orleans.—p. 8.
Id.: Differential Diagnosis of Liver Disease and Classification of Jaundice. C. J. Tripoli and D. E. Fader, New Orleans.—p. 13.
Id.: Basic Therapeutic Considerations in Diseases of Liver. F. F. Boyce, New Orleans.—p. 18.
Influenzal Meningitis: Review of Recent Literature with Case Reports. Ruth Aléman, New Orleans.—p. 25.
Coordination of Antituberculosis Activities. J. L. Wilson, New Orleans.—p. 34.
*Typhus Fever in Louisiana. J. H. Musser, New Orleans.—p. 39.
Ruptured Infracranial Aneurysm: Case Report. G. M. Haik, J. D. Magee and G. C. Anderson, New Orleans.—p. 42.

Typhus in Louisiana.—Musser states that typhus is becoming more frequently observed in the United States, particularly in the Southern states, involving the urban and rural population. The author reported his second case in May 1929, while in 1939 there were 115 cases reported to the Louisiana State Board of Health, Division of Epidemiology. This indicates the rapidity with which typhus has become an epidemiologic problem. In Louisiana the disease occurs both in the summer and in the winter. It is entirely of the endemic type. Endemic typhus has an incubation period of from seven to fourteen days. While there may be irregular prodromes, the disease usually strikes suddenly with a chill or chilliness, followed by high fever, marked headache and severe prostration. The temperature rises persistently and is at its maximum in from five to seven days. The fever is continuous, is maintained for approximately a week

and then falls to normal in from five to seven days. The characteristic exanthem, which is really of supreme diagnostic importance, occurs on the fourth or fifth day of the disease. The symptoms of endemic typhus are milder than of the typhoid and infinitely more innocuous than epidemic typhus. The death rate is correspondingly much less. A patient rarely dies of typhus. The author believes that the problem of endemic typhus in the South can be explained by the fact that here the milder winter climate, adequate food supply and failure to rat proof buildings results in a heavy rat population, whereas in the North the necessity of erecting buildings of concrete and brick to keep out the winter and the lack of food for a rat makes the disease relatively rare. The only possible control of endemic typhus is to cut down or minimize the rat population which carries the flea. Continuous trapping and poisoning of rats should be kept up wherever rats are found in a large number.

North Carolina Medical Journal, Winston-Salem

1:331-370 (July) 1940

- Importance of Bronchoscopy in Diagnosis of Intrathoracic Conditions. V. K. Hart, Charlotte.—p. 331.
Early Signs and Symptoms of Cancer: Cancer of Esophagus. B. E. Rhudy, Greensboro.—p. 341.
Id.: Cancer of Stomach. A. de T. Valk, Winston-Salem.—p. 342.
Id.: Cancer of Bowel and Rectum. H. L. Brockmann, High Point.—p. 343.
Id.: Cancer of Bladder. C. O. Delaney, Winston-Salem.—p. 345.
Id.: Cancer of Bone. R. A. Moore, Winston-Salem.—p. 347.
Id.: Cancer of Lung. W. J. Benton, Greensboro.—p. 348.
Id.: Cancer of Cervix and Uterus. M. S. Martin, Mount Airy.—p. 349.
Id.: Cancer of Breast. R. O. Lyday, Greensboro.—p. 351.
Diagnosis and Management of Latent Syphilis. J. L. Callaway, Durham, and G. M. Leiby, Raleigh.—p. 352.
Synthetic Estrogenic Hormone: Preliminary Report. J. W. Farthing, Wilmington.—p. 354.
David A. Stanton, M.D., F.A.C.S. F. R. Taylor, High Point.—p. 356.
Invagination of Appendix. A. Hinson, Rock Hills, S. C.—p. 358.

Pennsylvania Medical Journal, Harrisburg

43:1377-1520 (July) 1940

- Correlation of Chronic Infection of Upper and Lower Respiratory Tracts. F. Smith, Grand Rapids, Mich.—p. 1389.
Abdominal Trauma. J. W. Levering, Abington.—p. 1398.
Important Aspects of Malignancies of Skin and Mucous Membranes. Patricia H. Drant, Philadelphia.—p. 1405.
Resuscitation of Newborn. R. J. Kressler, Philadelphia.—p. 1411.
Intra-Ocular Imbalance Indicative of Endocrine Deficiency. H. H. Turner, Pittsburgh.—p. 1413.
Diabetes: III. Significance of Dermatophytosis in Diabetes. H. T. Kelly, Philadelphia.—p. 1416.
Urologic Emergencies Due to Acute Infection. G. L. Armitage Jr., Chester.—p. 1418.
Traumatic Urologic Emergencies, with Special Reference to Urethra, Bladder and Kidney. E. J. McCague, Pittsburgh.—p. 1420.
Management of Acute Urinary Tract Obstructions. J. C. Birdsall, Philadelphia.—p. 1424.
Management of Uterine Displacements. R. W. Mohler, Philadelphia.—p. 1434.
Premature Infants. W. H. Crawford, G. B. Haber and R. J. Kressler, Philadelphia.—p. 1438.
Surgical Aspects of Diverticulitis. T. A. Shallow, Philadelphia.—p. 1443.
Mesenteric Cysts. F. L. Larkin, Uniontown.—p. 1446.
Rational Treatment of Acute Cholecystitis. J. N. Coombs, Philadelphia.—p. 1449.
*Vaginal Antisepsis and Puerperal Morbidity: Suggested Classification of Morbidity Based on Analysis of 5,140 Cases of Labor. C. E. Ziegler and B. R. Austin, Pittsburgh.—p. 1452.
Control of Contagious Diseases in Pediatric Wards of a General Hospital: Results of Two Year Trial. C. C. Fischer, Philadelphia.—p. 1457.
End Results of Carcinoma of Colon. G. Willauer, Philadelphia.—p. 1460.

Vaginal Antisepsis and Puerperal Morbidity.—Ziegler and Austin consider the vagina of a woman in labor as potentially infected in that it may contain pathogenic bacteria. According to them the so-called normally sterile vagina in the adult female does not exist. Constant drainage into the vagina from the cervix and easy and repeated contamination from without conspire to defeat the establishment and maintenance of vaginal asepsis. During labor infected contents of cervical glands are expressed into the birth canal by the ironing out processes of effacement and dilatation of the cervix. The obstetrician is the only surgeon who makes no attempt to sterilize his operative field—the vagina. If it is infected when labor

begins, the most perfect technic of preparation which does not include the vagina will not be sufficient to prevent puerperal infection in the presence of the abrasions, contusions and lacerations which commonly occur, and especially when the hands of the operator or the forceps blades are passed through an unprepared bacteria-laden vagina into the uterus. If antiseptics kill bacteria, decrease their numbers and attenuate their virulence there is no reason why they should not be used in the vagina as regularly as they are used elsewhere. During the last seven years vaginal antisepsis has been used as a matter of routine at the Elizabeth Steel Magee Hospital in about 17,000 cases of labor. It has been applied by means of the Kolpospray—an atomizer operated by compressed air with a pressure of about 35 pounds. The vagina is rapidly flooded and is thoroughly cleansed and flushed by the force of the spray. The secretions are mixed with the solution and blown out through the vents in the rear of the encasing tip as the escaping air under pressure returns unhindered to the atmosphere. The antiseptic used was a 1:2,500 solution of tincture of merthiolate. Each patient is sprayed at the beginning of labor and every eight hours thereafter until the completion of labor. Should the membranes rupture before labor begins, the spraying is done every twelve hours until labor begins. Vaginas are sprayed before each examination and before all operative procedures, including cesarean section, irrespective of when sprayed previously. When possible, an hour should elapse after spraying before operative procedures are undertaken. A spraying should be timed to follow complete effacement of the cervix when possible. If an enema is to be given, it must precede preparation and spraying. A comparison of 5,140 cases, 2,749 deliveries in 1932 before antisepsis was practiced and 2,391 deliveries in 1937 (the fifth year of its routine employment) shows that of the first group 45.47 per cent were afebrile, 39.32 per cent had fevers from 99.2 to 100.2 F. and 15.21 per cent had fevers higher than 100.4 F. The respective figures for the 1937 group were 48.47, 42.37 and 9.16 per cent. The last percentage includes 287 unsprayed vaginas. In the 1932 group there were eight deaths from peritonitis, nine from septicemia, five from hemorrhage, two from pulmonary complications, one from a cardiac ailment, seven from toxemia and four miscellaneous. The corresponding figures for the 1937 group were three, zero, four, four, two, zero and one. The authors state that vaginal antisepsis is an addition to and not a substitute for asepsis as practiced in every well conducted maternity. It will not lessen morbidity due to infection introduced from without during the puerperium.

Public Health Reports, Washington, D. C.

55:1193-1240 (July 5) 1940

*Studies in Childbirth Mortality: II. Age and Parity as Factors in Puerperal Fatality. J. Yerushalmy, C. E. Palmer and M. Kramer.—p. 1195.

Rapid Thick Film Blood Stain. L. Michelson and Aimee Wilcox.—p. 1221.

Lymphocytic Choriomeningitis: Gray Mice, Mus Musculus, a Reservoir for Infection. C. Armstrong, J. J. Wallace and L. Ross.—p. 1222.

55:1241-1294 (July 12) 1940

Development of National Maritime Quarantine System of the United States. B. C. Hampton.—p. 1241.

Studies on Dental Caries: IX. Prevalence and Incidence of Dental Caries Experience, Dental Care and Carious Defects Requiring Treatment in High School Children. H. Klein and C. E. Palmer.—p. 1258.

Study of Role of Ventilating Systems in Transmission of Bacteria. J. M. Dalla Valle and A. Hollaender.—p. 1268.

American Azures in Preparation of Satisfactory Giemsa Stains for Malaria Parasites. M. A. Roe, R. D. Lillie and A. Wilcox.—p. 1272.

Age and Parity as Factors in Puerperal Fatality.—Yerushalmy and his associates discuss the bearing of age and parity as factors in puerperal mortality. His study is based on the 258,525 infants born in New York State (exclusive of New York City) during 1936, 1937 and 1938. The maternal death certificate was matched with the birth or stillbirth certificate of the infant, and the death certificate of every infant who died within one month of birth was matched with its birth certificate. The risk to the mother associated with the delivery of an offspring of viable age is defined as "puerperal fatality." The author found that the puerperal fatality rate was high for

mothers delivered of their first child (28.2 per 10,000 deliveries), lowest for the mothers of third births (18.5) and highest for mothers delivered of their eighth and ninth child (63.4). The rate for combined infant loss (late fetal and neonatal mortality) was also relatively high for first births (59.8 per thousand of total births), was at a minimum for second births (44.9) and increased thereafter with order of birth to a maximum (96.9) for births of the highest orders. The relative stillbirth rates by order of birth were similar to the relative puerperal fatality rates. The increase in puerperal fatality by order of birth embraces all causes of death. However, septicemia caused a smaller proportion of deaths among the higher orders of births, while toxemia was more frequent among first births and births of higher orders than among the intermediary births. Deaths from hemorrhage were less frequent among primiparas than among multiparas. The puerperal fatality increased with advancing parity among mothers whose infants survived the first month of life. More than 5 per cent of the deliveries terminated prematurely. The infant loss was eighteen times as high among the premature as among the full-term infants. Puerperal fatality was seven times as high when pregnancy terminated prematurely as when delivery was at term. The infant loss was relatively high among the youngest mothers, was lowest for mothers in their twenties and increased thereafter with the age of the mother. Puerperal fatality was at a minimum for the youngest mothers and increased sharply with advancing age. The puerperal fatality rate and the infant loss were independently related to the order of birth and the age of the mother. The puerperal fatality rate and the infant loss were relatively high when the father was young, low when the father was between 25 and 34 years of age and again high when the father was older. This variation is independent of the correlation between the ages of husband and wife. Similarly the variation in puerperal fatality by age of husband is not an expression of the relation between age of father and infant loss.

Quarterly J. of Studies on Alcohol, New Haven, Conn.

1:1-200 (June) 1940

High Proof of Liquor as Factor in Production of Alcoholism. Y. Henderson, New Haven, Conn.—p. 1.

Alcohol: Study of Social Ambivalence. A. Myerson, Boston.—p. 13.

Personality Factors in Alcoholic Addiction. N. D. C. Lewis, New York.—p. 21.

Influence of Alcohol on Digestive Tract: Review. J. M. Beazell and A. C. Ivy, Chicago.—p. 45.

Influence of Alcohol on Adequacy of B Vitamins in the American Diet. N. Jolliffe, New York.—p. 74.

Effects of Alcohol on Normal and Pathologic Kidney: Review. M. Bruger, New York.—p. 85.

Cirrhosis of Liver. C. L. Connor, San Francisco.—p. 95.

Activities of the Research Council on Problems of Alcohol.—p. 104.

Effects of Alcohol on Individual: Review of Literature of 1939. E. M. Jellinek and N. Jolliffe, New York.—p. 110.

Texas State Journal of Medicine, Fort Worth

36:207-276 (July) 1940

New Concepts of Etiology of Hemolytic Anemia and Their Relation to Diagnosis. W. D. Tigertt and J. M. Hill, Dallas.—p. 214.

Place of Vitamin K in Hemorrhagic Diseases. A. E. Greer, Houston.—p. 218.

Intravenous Use of Concentrated Plasma Prepared by Adtevac Process. J. M. Hill, Dallas.—p. 223.

*Crystalline Sulfanilamide in Compound Fractures. W. G. Stuck, E. A. Maxwell and R. N. O. Monsalvo, San Antonio.—p. 225.

Sulfanilamide: Its Mode of Action and Toxic and Untoward Effects. B. R. Collins, Wichita Falls.—p. 229.

*Sulfanilamide in Treatment of Undulant Fever. W. S. Horn, Fort Worth.—p. 232.

Foreign Bodies in Stomach Observed Through Gastroscopy: Report of Five Cases. C. O. Patterson and M. O. Rouse, Dallas.—p. 238.

Chorio-Allantoic Membrane Infection as Diagnostic Test for Smallpox. S. W. Bohls and J. V. Irons, Austin.—p. 242.

The State Reservoir of Malaria Therapy. D. H. Lawrence and J. E. Sorell, Austin.—p. 246.

Socialized Medicine: Menace to Public Health. J. H. Page, Houston.—p. 251.

Crystalline Sulfanilamide in Compound Fractures.—Stuck and his co-workers report the use of crystalline sulfanilamide in twenty-six consecutive unselected cases of compound fractures. Twenty-one cases were fresh compound fractures seen shortly after the accident, and five were old compound frac-

tures in which chronic osteomyelitis had been present for many months. Primary union was obtained after operation in twenty-two. Osteomyelitis developed in two of the fresh cases (one a compound dislocation of the ankle, the other a badly macerated compound fracture of the tibia). Healing has not yet occurred in two of the old osteomyelitis cases. In contrast to the usual procedure all wounds were closed without drains and yet gas gangrene did not develop in any of the new cases. The local use of sulfanilamide does not in any way take the place of thorough cleansing and débridement of wounds. The administration of prophylactic antitetanus serum and antigas serum is not invariably effective it may be safe to omit its routine use. The prophylactic administration of roentgen therapy over compound wounds, which was a routine procedure, has been discontinued for they have complete confidence that gas gangrene will not develop in wounds treated with sulfanilamide. The oral prophylactic administration of sulfanilamide has been abandoned because they feel that high local concentrations of sulfanilamide are far more effective.

Sulfanilamide in Treatment of Undulant Fever.—Horn reviews twenty articles which report eighty-three cases of brucellosis treated with sulfanilamide or its derivatives. The daily dosage fluctuated from 1 to 6 Gm. and the total dosage from 7 to 72 Gm. The duration of treatment varied from thirty-six hours to twenty-three days and the reported results from failure to miraculous cures. However, a study of the compiled cases indicates a favorable influence on the subjective symptoms of the disease in the ratio of 2:1. This same ratio was elicited by the author in fifty-four cases treated with sulfanilamide or its derivatives. The toxic side effects were no different from those seen from its use in other conditions. Only two of the cases were acute. In one of these sulfanilamide has been given the credit for a cure on 40 grains (2.6 Gm.) daily for seventeen days, while the other patient failed to respond and died eight months later although she was given three additional courses of the drug. In the fifty-two chronic cases sulfanilamide was voted of value although a number of times the brucella organism was recovered from the feces after varying dosage and periods of sulfanilamide therapy. Small doses (2.3 Gm. daily) over a period of twenty-five days in the chronic cases seem to have a favorable effect. The courses are repeated every other month. Improvement appeared to be more consistent and more effective after the second than after the first course of treatment. The author believes that the provocative influence of sulfanilamide on the opsonocytaphagic index is of valuable diagnostic importance. Likewise he is convinced that it stimulates phagocytic protection and otherwise favorably influences the course of the disease in a satisfying majority of cases. He believes that the regular and consistent use of specific vaccine during and following sulfanilamide therapy is important; the one appears to complement the other.

Yale Journal of Biology and Medicine, New Haven 12:605-750 (July) 1940

- "A Journal, of a Young Man of Massachusetts, . . . Written by Himself." Boston: 1816, and a Note on the Author. H. R. Viets, New Haven, Conn.—p. 605.
- Studies on Relation of Kidney to Cardiovascular Disease. M. C. Winternitz, E. Mylon, L. L. Waters and R. Katzenstein, New Haven, Conn.—p. 623.
- Observations on Absorption, Excretion, Diffusion and Acetylation of Sulfathiazole in Man. J. F. Sadusk Jr., F. G. Blake and Anne Seymour, New Haven, Conn.—p. 681.
- The Disinfection Concentration Exponent. P. B. Cowles, New Haven, Conn.—p. 697.
- Effect of Hypophysectomy on Compensatory Renal Hypertrophy in Dogs. M. C. Winternitz and L. L. Waters, New Haven, Conn.—p. 705.
- Electrometric Studies of Tumors Induced in Mice by External Application of Benzpyrene. H. S. Burr, G. M. Smith and L. C. Strong, New Haven, Conn.—p. 711.
- Cortical Representation of Taste in Man and Monkey: I. Functional and Anatomic Relations of Taste, Olfaction and Somatic Sensibility. W. S. Børnstein, New Haven, Conn.—p. 719.
- The Queckenstedt Test: Consideration of Method of Application and Nursing Problems Related to It. O. Turner and Virginia C. Byrne, New Haven, Conn.—p. 737.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Ophthalmology, London 24:317-372 (July) 1940

Relationship Between Chronic Iridocyclitis and Tuberculosis, and Appropriate Therapy. W. D. W. Brocks, F. A. Juler and E. R. Williams.—p. 317.

British Journal of Radiology, London 13:221-256 (July) 1940

- Irradiation of Liquids. F. L. Hopwood.—p. 221.
- X-Ray Cinematography in Research. A. E. Barclay, K. J. Franklin and M. M. L. Prichard.—p. 227.
- Energy Absorption. W. V. Mayneord.—p. 235.
- Neutron Emission from Generator Operating at 300 Kilovolts. L. H. Gray and J. Read.—p. 248.
- Portable "Back-Scatter Phantom" for X-Ray Measurements. F. Happey.—p. 254.

British Medical Journal London 1:1043-1076 (June 29) 1940

- Volume and Rate in Blood Transfusion for Relief of Anemia. H. L. Marriott and A. Kekwick.—p. 1043.
- Plasma Transfusions in Treatment of Hemorrhage. H. J. Brennan.—p. 1047.
- Delayed Traumatic Intracerebral Hemorrhage. C. P. Symonds.—p. 1048.
- Anastomosis Tubes for Resection of Colon. N. C. Lake.—p. 1052.
- Volkman's Ischemia: Observations at Open Operation. E. B. Jones.—p. 1053.
- Occlusion of Brachial Artery and Volkman's Ischemic Contracture. L. W. Plewes.—p. 1054.

Edinburgh Medical Journal 47:441-512 (July) 1940

- *Studies on Stored Blood: I. Results in Series of 427 Transfusions. C. P. Stewart.—p. 441.
- Effort Syndrome in the Present War. F. R. Fraser.—p. 451.
- Some Aspects of Streptococcal Infection: Review. T. J. Mackie.—p. 466.
- Follicular Lymphoblastoma: Two Cases. R. Salm.—p. 486.

Results in 427 Stored Blood Transfusions.—Stewart reports on 427 transfusions with blood stored for from an hour or two to thirty days. At first no attempt was made to use relatively fresh blood in cases in which it is now believed to be essential. The results in such cases tended to be disappointing. In the surgical cases the results appeared to be independent of the "age" of the blood. In such conditions as leukemia, various types of anemia, septicemia, toxemia and the like, blood is now used which has been in store for as short a time as possible, and the results have, by the same criteria, greatly improved. In fact, fresh blood appears to possess little if any superiority. With the stabilization of conditions it has become possible to keep in store the large stock of blood, not more than two or three days old, necessary for war emergencies. It was found that blood stored for not more than fourteen days does not increase the reaction incidence and that with blood stored for from five to ten days the incidence may be reduced. However in an emergency it would be justifiable to use blood stored for more than fourteen days for cases of severe acute hemorrhage. There were fifty-eight reactions. Among the 259 transfusions performed since January 1940 there were twenty-seven reactions. Stored blood should not be used indiscriminately. Certain patients should receive blood not more than two days old, as by that time a considerable proportion of the viable leukocytes has disappeared. In these cases the necessity for providing leukocytes outweighs the lessened reaction incidence obtainable with blood stored for from five to ten days. Older blood seems to be suitable when the object of the transfusion is to supply fluid and oxygen-carrying power. The advantages of a blood store are greatest only if blood is withdrawn so frequently that almost fresh blood is always available. Many cases requiring fresh blood are not emergencies, and transfusions for them can usually be arranged on the day when blood is being withdrawn for the store. In this way practically "direct" transfusions can be given and the inconvenience to donors minimized.

Lancet, London

1:1149-1184 (June 29) 1940

- *Synthetic Vitamin K in Treatment of Hypoprothrombinemia. R. Kark and A. W. Souter.—p. 1149.
Stomach Ache. A. J. C. Latchmore.—p. 1153.
Air-Borne Streptococcal Infection Following Influenza. R. Cruickshank and C. Muir.—p. 1155.
*Sulfamethylthiazole in Experimental Staphylococcal Infections. A. Macdonald.—p. 1157.
The Sedimentation Index. G. Day.—p. 1160.

Synthetic Vitamin K in Hypoprothrombinemia.—Kark and Souter studied the vitamin K activity of a water-soluble derivative of 2-methyl-1, 4 naphthoquinone, administered intravenously or intramuscularly to eighteen patients with hypoprothrombinemia. The conditions in the patients were various but hypoprothrombinemia was a feature. There was a rapid rise in blood prothrombin concentration in nine cases after the administration of the compound. No toxic effects were observed. In most of these cases a relapse followed the discontinuance of therapy, and the blood prothrombin concentrations were again restored to normal by further treatment. In three cases there was active bleeding before treatment was begun. This was controlled within a few hours after its initiation. Discussing the cases that failed to respond to treatment, the authors state that whereas some patients with severe hepatic damage are apparently completely unable to produce prothrombin, others with most severe or most chronic hepatic disease produce prothrombin, but in quantities insufficient to maintain a normal level. The failure of response to the parenteral administration of vitamin K in these two groups of patients may be of some prognostic importance when considered along with the level at which the blood prothrombin concentration is maintained. All the patients of the first type died. The authors think it probable that in the future vitamin K or one of its analogues will be given as a routine before operation to patients suspected of having hypoprothrombinemia. However, such administration is not a guaranty that the blood prothrombin concentration will be raised to within normal limits. If the prothrombin level is low in spite of such treatment, blood transfusion is the only known therapeutic measure which can increase the prothrombin concentration.

Sulfamethylthiazole in Staphylococcal Infections.—Macdonald found that about half of the mice infected with staphylococci by the intraperitoneal or intravenous route and treated with sulfapyridine or sulfamethylthiazole lived for twenty-one days. Many of the mice surviving this length of time harbored the infecting organism and some still had abscesses in the kidneys. Treatment for only fifteen days may not have been sufficient, but it is fairly characteristic of the sulfonamide drugs that when they act they do so quickly. Some of the results obtained compare unfavorably with those of several experienced workers. It seems that both sulfapyridine and sulfamethylthiazole prevented many of the early deaths in staphylococcal infections of mice, and it is probable that both drugs are less efficient after abscesses have begun to form. None of the sulfonamide drugs are particularly active in the presence of pus, and the experiments with cutaneous abscesses may indicate that sulfamethylthiazole does not completely overcome this difficulty. There is little evidence that sulfamethylthiazole is as specific for staphylococcal infections as other sulfonamide compounds are for pneumococcal or for streptococcal infections.

Practitioner London

145:1-84 (July) 1940

- Pyelitis. T. H. Oliver.—p. 1.
Disturbances of Micturition in Old Age. C. Morson.—p. 9.
Tuberculosis of the Kidney. F. K. Smith.—p. 15.
*Practical Points in Diagnosis and Treatment of Renal Tumors. T. Millin.—p. 25.
Enuresis in Children. C. T. Potter.—p. 33.
Head Injuries. D. W. C. Northfield.—p. 41.
Dysentery and Enteric Fever as Medical Emergencies of War. R. L. H. Minchin.—p. 54.
Use of Vitamin D Preparations in Prevention and Treatment of Rickets. Cecile Asher.—p. 61.
Modern Therapeutics. XIII. Mercury in Therapeutics. A. D. Macdonald.—p. 66.

Schweizerische medizinische Wochenschrift, Basel

70:577-616 (June 22) 1940. Partial Index

- Connections Between Chemical Constitution and Pharmacotherapeutic Action of Cardiac Glucosides. E. Rothlin.—p. 577.
Glands with Neurocrine Function in Brain. G. Roussy and M. Mosinger.—p. 581.
Casuistics of Gaucher's Disease. E. Ruppanner.—p. 584.
*Surgical Treatment of Hypoglycemic Conditions Caused by Langerhansian Adenomas. F. Sauerbruch.—p. 587.
*Pathogenesis of Nonrenal Hypertension. R. Siebeck.—p. 589.
Disorders of Costal Cartilages as Cause of Pain in Chest. R. Staehelin.—p. 592.
Importance of Purification of Natural Active Principles, Especially of the Digitalis Glucosides for Therapy. A. Stoll.—p. 594.
New Conceptions of Medical Application of Vitamins. A. Szent-Györgyi.—p. 596.
Engorged Liver and Its Functional Disturbances. C. Wegelin.—p. 597.
Syntopon (Phosphate of 3-Diethylamino-2,2-Dimethyl Propylester of Tropic Acid) a Valuable Aid in Expulsion of Uteral Calculi. H. Wildbolz.—p. 599.
*Possibilities and Prospects of Suction Drainage of Pulmonary Cavities According to Monaldi. J. E. Wolf.—p. 600.

Surgery for Hypoglycemia Caused by Adenomas of Islands of Langerhans.—Sauerbruch credits American investigators with having recognized in recent years a form of paroxysmal spontaneous hypoglycemia caused by hyperfunctioning of a benign pancreatic adenoma. Removal of the tumor effects a cure. The clinical picture begins with a sensation of hunger, fatigue and faintness. The patient feels weak in the knees and collapses; there are apathy, loss of orientation, stupor and somnolence. General or localized spasms may appear. The pupils become dilated and lose their reactivity. There may be foaming at the mouth and biting of the tongue or lips. As a rule there are labored respiration, rapid pulse and increased blood pressure. Symptoms resemble those of an epileptic attack. The patients after awakening fail to recollect the event. They recover within a few minutes if given sugar solution to drink; the recovery is even more rapid after intravenous injection of dextrose. The diagnosis of such an attack is usually one of epilepsy or brain tumor. Such was the experience of the author in three cases. The true nature of the condition was not recognized until repeated determinations of the sugar content of the lumbar punctate and of the blood had been made. An additional important sign of a pancreatic adenoma is the time of the appearance of the attacks. They generally appear in the morning, when the patient is still fasting, when he is hungry or after exertions or excitations; that is, always when the blood sugar level is physiologically low. Early operation is advisable. The detection of a tumor the size of a cherry stone or a cherry may be difficult. Frequently it can only be felt and in such a case splitting of the cortical layer is necessary. The pancreas is best exposed through the gastrocolic ligament. The author gives detailed clinical histories of two patients with hypoglycemia in whom recovery followed the removal of a langerhansian adenoma. The first patient was a girl aged 7, the second a woman aged 50. The author cites two more investigators who have each reported a recent case cured by extirpation of an insuloma.

Pathogenesis of Nonrenal Hypertension.—According to Siebeck it is now generally recognized that there are many disorders associated with temporary or permanent increase in blood pressure not caused by morbid changes in the kidneys. The differentiation of the renal from the nonrenal form of hypertension is often quite difficult, because it frequently depends on a history which is not reliable. The two forms differ in significance. In every severe chronic nephritis there exists the danger of gradual renal decay which finally results in renal insufficiency. In nonrenal hypertension, however, renal degeneration is rare, circulatory failure and cerebral disturbances being much more frequent complications. Investigations demonstrated that in the event of insufficient blood perfusion of the kidneys there develop "pressor substances" which circulate in the blood and produce a general vasoconstriction. Apparently they can be differentiated from other nonrenal pressor substances, such as were demonstrated by Marx in other forms of hypertension and in epilepsy. At the onset of acute nephritis the blood pressure is not dependent on the kidney. In scarlet fever, for example, hypertension often precedes the symptoms of nephritis. Moreover, the blood pressure may increase before pressor substances

appear in the blood. In chronic nephritis there is often no relationship between the degree of renal damage and the height of the blood pressure. Furthermore, it is known that in the later stages of nonrenal hypertension the kidneys may become involved. Nevertheless the etiology of nonrenal hypertension is not entirely obscure. The significance of the hereditary factor is no longer disputed and the fact that the nonrenal hypertension increases with age is also evident. The author observed repeatedly that hypertension may develop after acute infections even if there is no nephritis. He thinks that hereditary predisposition and damage caused by misuse of tobacco, restlessness and increased physical and psychic tension may also play their part, but he regards the role of infections as most important in the genesis of the nonrenal "essential" hypertension. For this reason infections, particularly chronic foci of infection, should be searched for and treated. If the hypertension has already become chronic the prospect of a cure or improvement is slight. Early treatment, therefore, is essential. Other methods of treatment should not be neglected. In view of the constitutional character of the disease, medicinal treatment is of value only to counteract temporary complaints and complications. A suitable regulation of the mode of life is of chief importance. There should be proper rest and relaxation, suitable arrangement of the daily tasks, calm acceptance of the tribulations of life, restriction of salt in the diet and liberal quantities of fruits and fruit juices, abstinence from tobacco and moderation in the consumption of wine and beer.

Monaldi's Suction Drainage of Pulmonary Cavities.—Wolf calls attention to Monaldi's method of suction drainage of tuberculous cavities of the lung. Monaldi succeeded in reducing and gradually closing tuberculous cavities by permanent conversion of the positive internal pressure into a negative one by means of suction drainage (introduction of a rubber catheter through the thoracic wall into the pulmonary cavity). Roentgenologic and anatomic observations proved that the atelectatic zones surrounding the cavities actually expand as a result of the negative pressure. Relatively recent cavernous processes have better prospects of cure than old cavities with rigid walls, but even cavities with rigid walls can be obliterated by the suction treatment. The chief indication for suction drainage is giant cavities which do not readily yield to the various collapse methods. Even extensive thoracoplasty often fails to produce a complete collapse of these giant cavities and the possibility of dissemination presents a constant danger for the patient. If the Monaldi method does not effect a complete cure, it at least reduces the size of the cavity and makes it amenable to operative intervention. Residual cavities which have undergone plastic operations can likewise be subjected to suction drainage. The author observed a surprising improvement in the subjective and objective condition of his patients as the immediate effect of suction drainage. Attacks of coughing ceased soon after the introduction of the catheter and toxic symptoms gradually decreased in the course of the following days and weeks. The temperature of febrile patients was reduced and this was accompanied by improvement in the general condition and in the appetite. The quantity of sputum decreased in all cases, and sputum retention, so frequent in giant cavities, did not occur. Better drainage brings about detoxication and rapid disappearance of toxic symptoms. Heart action improves and night sweats disappear.

Dia Medico, Buenos Aires

12:597-620 (July 8) 1940. Partial Index

Endarteritis Obliterans of Lower Extremities. C. A. Leoni Iparra-guirre.—p. 597.

*Ascorbic Acid in Treatment of Vomiting of Pregnancy. D. Taylor Gorostiaga.—p. 612.

Ascorbic Acid Therapy of Vomiting of Pregnancy.—Taylor Gorostiaga made observations on the behavior of ascorbic acid in normal pregnancy and pregnancy complicated by vomiting or toxemia. The experiments involved thirty women in the course of early pregnancy and ten normal women. Demole's test for saturation of ascorbic acid in the body was used. The test consists of making a preliminary quantitative determination of the elimination of ascorbic acid in the urine,

and administration to patients of ascorbic acid by mouth in daily doses of 300 mg. up to the appearance of ascorbic acid in the urine in the amount of about 5 mg. per hundred cubic centimeters of urine. This amount represents normal saturation of the body with ascorbic acid. The acuteness of organic deficiency of the substance is evaluated from the storage of ascorbic acid in the body, before appearance of the aforementioned approximate amount of the acid in the urine. The author found that a physiologic deficiency of from 600 to 900 mg. of ascorbic acid may exist in normal women. The deficiency reaches figures of about 1,200 mg. in normal pregnancy and of higher figures in gestosis and vomiting. Either condition is controlled by ascorbic acid treatment when hypovitaminosis C is present, except when neuropathic or other disorders predominate. The treatment consists of administration of ascorbic acid by mouth up to normal ascorbic acid saturation as shown by the elimination of about 5 mg. of the acid per hundred cubic centimeters of urine. Thereafter the saturation is maintained by administering 100 mg. of the acid daily.

Sovetskaya Meditsina, Moscow

Pp. 1-56 (No. 7) 1940. Partial Index

Basic Pathologic Characteristics of Bacillary Dysentery. Y. M. Lazovskiy.—p. 7.

Problems in Combatting Dysentery of Childhood. S. O. Dulitskiy.—p. 10.

Morphologic and Biochemical Characters of Feces in Dyspepsia and Dysentery. A. V. Vishnyakov.—p. 18.

*Effectiveness of Specific Virus Vaccine Therapy in Grip by Inhalation. A. V. Nechaev.—p. 25.

Inhalation of Virus Vaccine for Grip.—Nechaev reports the results obtained with inhalation of antigrip virus vaccine as observed in a group of 437 cases of epidemic grip and 198 cases of sporadic grip. The vaccine is prepared by sending a current of air into a specially constructed glass container which reduces the vaccine to the consistency of a mist, which is then inhaled by the patient through a sort of a gas mask tube. The duration of inhalation amounted to from twenty to thirty minutes and the amount of virus vaccine inhaled to from 1.5 to 3 cc. As a rule, one inhalation constituted the sole treatment. A few patients were given two. The patients were divided into equal groups, one being treated with the virus vaccine inhalation, the other, serving as a control, being treated with the usual drugs such as the salicylates, methenamine and calcium. Sixty patients were treated by the inhalation on the first day of the illness and the results were compared with a corresponding group treated with salicylates. Forty-five patients received the inhalation therapy on the second day and a corresponding group was treated medicinally on the second day. A third group consisting of thirty-five patients was treated with inhalation on the third day of the disease and a corresponding group was treated medicinally. The comparison of the results obtained demonstrated the effectiveness of vaccine inhalation therapy in lowering the temperature and in combating symptoms of intoxication characteristic of epidemic grip. The vaccine treatment was particularly effective when applied on the first or second day of the disease. The vaccine when applied during the first two days was likewise effective in aborting the lesions of the mucous surfaces of the nasopharynx and the upper respiratory tract. When administered on the third day of the disease the results were no better than in the control group. The virus vaccine inhalation therapy applied during the first three days of the disease proved to be a valuable prophylactic measure against complications of grip. The author emphasizes a marked diminution in the incidence of pneumonia, otitis, sinusitis and angina as compared with the control group. Recurrences were entirely absent. Of 140 patients treated in the course of 1939 with the vaccine there was not a single instance of pneumonia, whereas there were forty-three instances of pneumonia in the group of 297 cases in a control group. Analogous results were noted during the epidemic of 1938; of 122 cases treated by vaccine inhalation there was not a single instance of pneumonia, whereas there were twenty-six instances of pneumonia among 280 control cases. The virus vaccine inhalation therapy was disappointing in sporadic grip both with regard to the uncomplicated cases and with regard to prevention of complications.

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DERMATITIS

CHAIRMAN'S ADDRESS

JOHN G. DOWNING, M.D.
BOSTON

At the turn of the century allergy was an unknown word. It was coined by Pirquet in 1906 to express the concept of an altered capacity to react, in an attempt to simplify the problems of "hyposensitivity and hypersensitivity." Perhaps time will justify its choice, but at present the term needs further clarification. Hence many immunologists and practitioners still prefer such terms as sensitivity, hypersensitivity, hyposensitivity, anaphylaxis and idiosyncrasy. Whatever the fate of the word allergy may be, or the concepts which prompted the origin of the term, it has profoundly stimulated thought, blazed new trails into the hinterlands of research and forged bonds of common interest between dermatology and other branches of medicine, particularly immunology.

Under this influence dermatology has made striking progress in the past four decades. Of special note is our growing knowledge of those groups of so-called eczemas which comprise perhaps three fourths of all cutaneous disease. For a long time the majority held that such disturbances were nutritional in origin. Jadassohn and his school, however, refused to accept this metabolic theory and maintained that most eczemas were caused by external factors. As a result, much has been done to solve the riddle, so much that it would be impossible to give adequate credit to any one individual or group of individuals without slighting some one who also has made a valuable contribution to the solution of the problem of dermatitis and eczema. Therefore, names and references to particular studies will be omitted in this paper, with the understanding that I make no claim for originality but am merely presenting a summary and my opinions based on the recent work for which dermatology owes a debt of gratitude. Investigative research has narrowed the concept of eczema. Narrow as this concept may be, there still remains a group which cannot be explained by external influences.

There have been attempts to eliminate eczema from the medical vocabulary, but like rheumatism it seems entrenched as a household word. To the lay mind it is an awesome and treatment-resistant disease of the skin; to the practitioner it is a convenient label for an

itching cutaneous eruption of doubtful origin, while to the dermatologist it is a symptom complex which at some time in its course is characterized by vesiculation and oozing.

The term eczema may disappear when the causes of all cases are better understood, but it cannot be ignored today. In any case, disagreements over the endogenous or exogenous origin of the disease are of minor importance; the important factor is the research which is simplifying the maze of descriptive morphology by eliminating those cases for which a specific etiology has been found. The essential problem is our understanding of the concepts of specific, altered reactivity or cutaneous hypersensitivity; that eczema, so called, is an abnormal reaction to a normally innocuous exposure and that the person so afflicted has some predisposing change in his system that needs readjustment. By keeping these distinctions clearly in mind, we may be able to control our concepts of allergy and eczema and not let them embrace practically all cutaneous disorders as eczema once did.

Every eczema is a dermatitis but the converse is not true. Dermatitis, a much broader term, is an inflammation of the skin due to internal or external causes, the result of contact, ingestion, inhalation, injection, instillation or other methods of absorption. It is characterized by erythema, edema, papules and vesicles; it may progress to simple scaling and desquamation or it may first become oozing and crusted and then desquamate; it may become secondarily infected with the formation of pustules or persist as an infiltrated, excoriated, lichenified eruption rebellious to treatment. Clinically it may present any one or any combination of the lesions mentioned. Confusion has arisen from the use of the terms eczema and dermatitis as if they were distinct entities. This has been further increased by qualifying the terms according to morphology, topography, etiology and predisposing factors.

DERMATITIS DUE TO EXTERNAL CAUSES

Dermatitis due to external causes (dermatitis venenata) is so common that it requires classification. This classification considers first the type of agent, second the use of that agent and third the nature of the lesions produced. The second division of that classification is of little value because the agent may be employed under continually changing conditions, as for example paraphenylenediamine, which is extensively used in the manufacture of cosmetics, textiles, garments and other branches of industry. The third division is also open to criticism because the same contact may produce varying degrees of disease, depending on its strength as applied, the area to which it is applied and the method of application; that is, friction and the time exposure. As an example I might cite those oils which cause folliculitis of the arms or cancer of the scrotum.

From the dermatology departments of St. Elizabeth's Hospital, Boston City Hospital and Tufts College Medical School.

Because of lack of space this article has been abbreviated in THE JOURNAL. The complete article appears in the author's reprints.

Read before the Section on Dermatology and Syphilology at the Ninety-First Annual Session of the American Medical Association, New York, June 12, 1940.

The classification most scientifically accurate is based on the etiologic factor which groups irritants somewhat as in table 1.

In general the concentration of the irritant, the length of time and the conditions under which exposure occurs



Fig. 1.—Dermatitis factitia, July 10, 1934: P. N., a man aged 50, cut the right third finger Sept. 9, 1933. The excrescences resembling dark brown tortoise shell appeared on both hands. Plaster casts ended the lesions and the compensation he was receiving. He was again seen Feb. 13, 1937, when he had an assumed name, similar lesions and compensation from another insurer since April 2, 1936. Casts were not necessary this time; he settled his claim promptly.

serve to differentiate two types of dermatitis venenata—nonsensitization and sensitization. Just where the former ends and the latter begins is often impossible to say. Nonsensitization dermatitis is caused by an irritant that will in given concentrations and under given surrounding factors, such as sealing of the exposed area, affect practically all human skins. Following the repair of such an injury the minutest exposure may suffice to produce a recurrence. Nonsensitization dermatitis is caused by some mechanical or physical agent or by a powerful chemical applied either deliberately or accidentally to the skin. The reaction is sudden and explosive. It is characterized by all degrees of inflammation and at times by the destruction of the cutaneous layers and even the subjacent tissues. The causative factor is almost always recognized and known to the patient; hence recovery is fairly prompt. Conspicuous in this group are the bizarre and unnatural eruptions called dermatitis factitia (fig. 1), which are self inflicted to invoke sympathy, escape unpleasant duties or obtain remuneration. They must be considered in the differential diagnoses of industrial dermatoses.

ECZEMA

Sensitization dermatitis, variously known as eczema, contact dermatitis or contact eczema, allergic dermatitis or allergic eczema, is an inflammation of the skin due to repeated exposures to substances which are normally

innocuous (fig. 2). In this type there is an initial exposure without resulting lesions, but subsequent exposures to even minimal quantities may result in reactions manifested either at the local site of contact or as a generalized process (fig. 3). The disease may be specific or nonspecific and is usually acquired in extra-uterine life.

In occupational eczema this hypersensitivity is obviously so acquired. A review of my last 500 cases showed only one with a positive family history; thirty-three, or 6.6 per cent, showed a previous history of cutaneous eruptions, and of these thirteen, or 2.69 per cent, had been classified as industrial. The development of occupational eczema is usually so gradual that it is

TABLE 1.—Classification of Irritants

A. Mechanical or physical agents	
1.	Heat or cold; dermatitis caloria
2.	Radium and x-rays; radiodermatitis Ultraviolet ray; dermatitis actinica
3.	Mechanical irritation (friction, pricks, cuts); dermatitis traumatica
4.	Mechanical interference with bodily functions (oils or powders); folliculitis
B. Flowering plants and their products—woods, extracts, lacquers; rhus dermatitis	
C. Living agents—fungal flora; dermatophytosis, members of the animal kingdom, mites; dermatitis parasitica	
D. Chemical agents, organic or inorganic; dermatitis industrialis or cosmetica	

difficult to determine when it really began. A sudden onset is rare except when the person has been in contact with a substance for years, followed by a period in which there was no exposure, after which renewed exposure reveals a sudden and severe sensitization. In the typical onset the experienced observer may trace a characteristic development. The areas first affected are those of maximum contact and the initial lesions offer valuable clues. Such lesions occur frequently among seasoned workers. Hence the causative factor is difficult to determine because of the long incubation period (fig. 4). Many occupational dermatitides are true

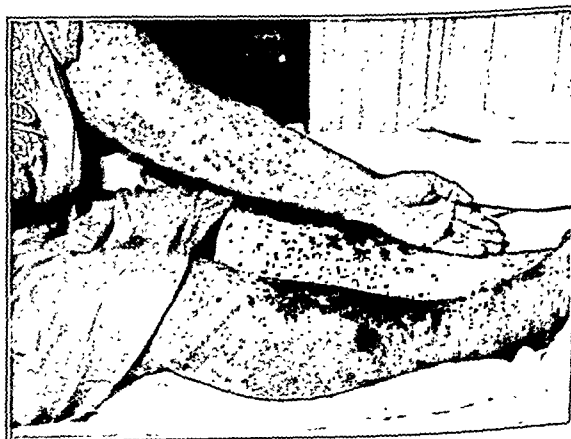


Fig. 3.—Dermatitis due to adhesive plaster, Oct. 6, 1939, seen on M. C., a woman aged 55. Local and generalized sensitization manifested after strapping of right lower leg.

examples of hypersensitivities. The diagnosis of a sensitization dermatitis is usually obvious to the trained dermatologist; nevertheless a thorough physical examination accompanied by laboratory studies should be made to confirm the diagnosis and determine the predisposing factors.

HISTORY. TAKING

History taking is most important, especially with reference to the time of onset. A careful survey should also be made of the family and personal history in an effort to establish hay fever, eczema, asthma or other manifestations of a family tendency toward hypersensitivities. The patient may state that the eruption has continued for years, while analysis discloses that the attacks are periodic and perhaps seasonal.

In industrial work such a history is most important and its accuracy must be clearly established. Length of service may assist in evaluating the truth of the evidence. The precise time of occurrence is especially significant. An eruption appearing immediately after a vacation would suggest a nonindustrial exposure or an explosive reaction of previously formed hypersensitivity. An eruption appearing at the beginning of a day's work may suggest predisposing home factors such as illness, worry, lack of sleep or dissipation. A similar disturbance at the end of a day's work may indicate excessive fatigue, carelessness or failure to use preventive measures. The introduction of a new chemical should be investigated, as well as the use of sensitizing drugs in the treatment of trivial injuries. From an economic point of view the time of onset may determine which insurer is liable for a disabling dermatitis. Other factors to be considered are a change of domicile, animal pets, plants, new furniture, the use of cleaners or insecticides in the home and recently purchased articles for personal adornment. The history should disclose a picture of the patient's routine and contacts at home, during recreation and at work. A comparison with other members of the family or employees may reveal significant details; otherwise a visit to the home or place of business may be necessary. Such a history will narrow the field of possible irritants and avoid needless cutaneous testing and the invoking of phobias. The history should suggest the cutaneous tests necessary to determine the etiology.

A specific sensitization can usually be discovered, but polysensitization greatly multiplies the difficulties; in a search of the causes of such eczematous dermatitides scratch and passive transfer tests are valueless; patch tests should be employed. A knowledge of closely allied chemicals and the existence of the same chemical in various contacts, in various medicaments and in foods is essential. As an example I might cite iodine in mangoes, cashew nuts and the iodides. The discovery of the etiologic factor and the instructions on its avoidance are the best methods of preventing recurrence.

PROGNOSIS

Prognosis, always important, is especially so with the industrial worker. Here hypersensitivity may be the controlling factor. If this condition is permanent the indisposition will continue. But there are undoubtedly many cases that are aggravated by predisposing factors such as overexposure, carelessness, fatigue, contact with other sensitizers, illness and dissipation. When these factors are removed the hypersensitivity disappears and the patient gets well. A sensitivity may persist although adjusted, but a certain percentage of such sufferers can return to work and remain well. To illustrate:

G. K., a man aged 39, worked for years without a vacation at servicing toilets. He handled a disinfectant containing oil of wintergreen, oil of pine, chlorine and phenol. During his vacation he did odd jobs which involved the use of turpentine and gasoline and on the two last days of his vacation he

suffered an eruption on the fingers of his right hand. This eruption spread rapidly within forty-eight hours after he resumed his regular employment. Drops of turpentine, gasoline and the disinfectant were applied to three areas of the intact skin, blotted and left uncovered. An immediate reaction to the turpentine persisted for twenty-four hours. A few moments later redness was disclosed at the site of the gasoline test; this lasted for six hours. Within a half hour marked erythema appeared at the site of the disinfectant; within twenty-four hours this area assumed the characteristics of his dermatitis and lasted for three weeks.

A thousand questionnaires were recently mailed to workers who had suffered from occupational dermatitis and been discharged as cured more than three years



Fig. 4.—Dermatitis due to nickel, July 16, 1938, seen on E. W., a woman aged 26, a garter maker. Sensitivity to her own garters was manifested on the thighs, later on the hands and forearms, as a result of handling nickel fasteners.

before. The difficulty of conducting a follow-up investigation and the migratory propensities of the lower paid workers were graphically revealed when no fewer than 213 questionnaires were returned because the addressee was unknown or had no address. Replies were obtained from 212 persons, of whom 204 had returned to their occupations. One hundred and four, including eight who never attempted to return to their occupations, suffered no further skin trouble. One hundred and twenty-five were able to remain at their occupations, fifty-five suffering occasional attacks and twelve having continued outbreaks lasting from three to nine years. Eight of these ailing ones were afflicted rather continuously, while in two instances the condition was aggravated by winter and in two by summer weather. If it may be assumed that the 204 replies represent a fair and adequate cross section of the experience, age, physical condition and the like of the 1,000 who were interrogated regarding their experience with dermatitis, it would appear that the average person has almost a

fifty fifty chance of not having a recurrence of his dermatitis if he continues in his same occupation and under the same conditions. However, this assumption may not be a fair one without an analysis of the various exposures of industry. An analysis of the 204 replies with respect to length of service in their present occupation and in relation to the probability of recurrence of their cutaneous disorder revealed a tendency for persons with short periods of service (and thus short periods of exposure) to have proportionately fewer recurrences than those with the comparatively long periods of service. Table 2 may illustrate this point more clearly.

Of those persons having one year of service or less only 13 per cent had recurrences, as compared with 25 per cent who did not. Furthermore, of those having comparatively long periods of service (five years or more) almost one and one-half times as many had recurrences (53 per cent) as did not (36 per cent). Thus it would appear that length of service (length of exposure) has some bearing on the probability of recur-

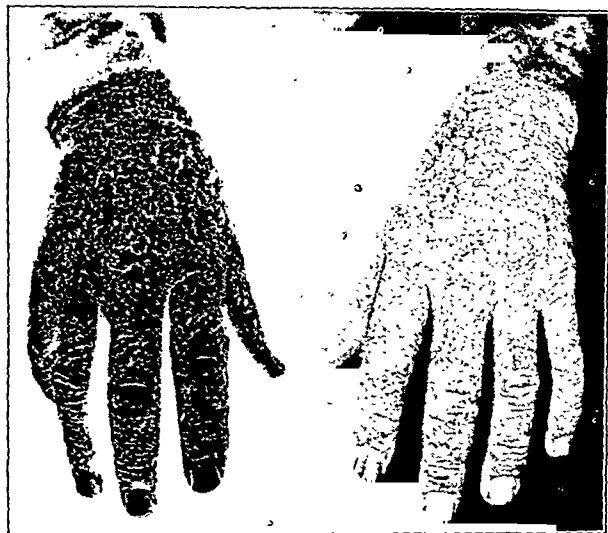


Fig. 5.—Dermatitis due to strong alkalis, Aug. 29, 1933, seen on G. W. R., a man aged 35, a cloth dyer. Eruption due to caustic soda.

rence of a contact dermatitis. To translate these results into the probabilities of having or not having recurrences of a dermatitis would appear roughly as follows:

1. The chances of the average person who has contracted a dermatitis of having a recurrence, provided he continues at his same occupation and under the same conditions, appear to be about fifty fifty, with the edge slightly in favor of his suffering a recurrence.
2. The chances for recurrence in a person with a comparatively short period of service (short period of exposure), say of one year or less service, appear to be about thirty-five in a hundred.
3. The chances for recurrence in a person with a comparatively long period of service (long period of exposure), say of five years or more service, appear to be about sixty in a hundred.

The apparent tendency for a person to have recurrences dependent on his length of service suggests that sensitization rather than desensitization results from continued industrial exposure. Failure to show clinical symptoms does not suggest immunity or toughening as much as ability to maintain the threshold of resistance. In fact I believe that, if any industrial group exposed

to possible sensitizers is compared with a group not so exposed, skin test reactions would be more numerous among the former group even though they showed no symptoms of disease. The length of service in these cases does not lend support to preemployment patch tests, for ninety-two (90 per cent) of the workers had been employed for from one to twenty years before they showed their first symptoms of dermatitis. In this group of replies no dishwasher or other sufferer from prolonged contact with soap and water returned a questionnaire showing a recurrence. This may be due to the ignorance of this type of worker, but it is unlikely that alkalis (fig. 5) cause a persistent hypersensitivity. The duration of dermatitis from external causes depends on whether it is a nonsensitization or a sensitization eruption. The initial treatment may be a determining factor in either case. However, the former is self limiting, lasting in some instances but a few days and rarely three weeks or more. The latter, when uncomplicated, usually responds to treatment within three months, but unforeseen and unaccountable exacerbations frequently occur. Both may be prolonged by secondary bacterial infection, usually a combination of staphylococci and streptococci.

THE QUESTION OF SECONDARY INFECTIONS

Industrial accident board hearings frequently evoke the statement that mycotic infection has caused the persistence of the dermatitis. Direct microscopic or cultural proof, however, is rarely presented. Two separate investigations for mycotic infections of contact cases that had persisted for more than three months brought out the following results:

At our clinic, where scrapings of the hands and feet of 215 persons with the diagnosis of contact dermatoses were examined by a technician trained in mycologic work, there were 208 negative and only seven (3.3 per cent) positive pathogens, one a trichophyton, and six monilia, only two of which were decided to be *Monilia albicans*. There were numerous molds, yeastlike organisms and bacteria.

In my own office ninety-one cases of occupational dermatitis of the hands which had persisted for three months or more were examined by a mycologist. Scrapings from the hands, feet and other areas of the skin showed, on direct microscopic examination, four positive fungi, three from the feet and one from the hand, while five disclosed mosaic forms. Cultures produced five pathogenic fungi, two trichophytions and two *Monilia albicans* from tissues obtained from the feet and one *Monilia albicans* from the hands. Seventy-six cultures yielded saprophytic fungi of mixed character, while seventy-four yielded bacteria. Eight produced no growth whatever.

The analysis thus disclosed about 1 per cent positive mycotic infection in contact dermatoses. Such figures make an interesting comparison with a similar analysis of persons with apparently normal skin. In 100 such examples in which several areas of skin were scraped and examined, only two were pathogenic, an epidermophyton and a trichophyton, both isolated from the toes. Analyzing these cases, we are justified in drawing the conclusion that a person suffering from a contact dermatitis is no more subject to mycotic infection than one with normal skin. It is my own belief that, when complications arise, the involving organisms are bacterial.

TREATMENT

Treatment depends on whether or not one is dealing with a sensitization dermatitis. The nonsensitive form responds quickly to soothing pastes and lotions. The other type, particularly when prolonged exposure has

occurred, shows a skin so hypersensitive that it reacts unfavorably to medication with pastes or ointments, particularly when they contain mercury, phenol or menthol. Exacerbations arise from environmental exposure. Removing the patient from such exposures by hospitalization and the application of the simplest therapeutic measures such as wet dressings of boric acid or physiologic solution of sodium chloride hasten recovery. As these dressings must be kept continually wet, however, an impossibility in a large hospital, a small private-hospital is preferred. Later treatment may include a bland lotion followed by a powder or a stiff paste. This paste should never be applied directly to the skin but should be placed on linen. Too vigorous removal of these applications will delay healing. When there is no apparent bacterial infection it is preferable to leave the lotion or paste on the skin or to sponge it off gently with sterile oil. Ointments are of value in the crusted, fissured or lichenified stage, but roentgen therapy is preferable. The desquamating stage needs no treatment. Vaccines may be helpful in secondary infections with bacteria. Attempts at desensitization, despite the occasional reports of success with plant oils, have

More promising methods are a study of the case history and the administration of a test dose of the suspected drug, which however must be very small, since even a minute amount may induce a severe reaction in a hypersensitive person. Dermatoses caused by hypersensitization must always be differentiated from those caused by overdosage or accumulation. Two illuminating industrial cases due to inhalation are recorded:

R. C., a woman working on suppositories, using lycopodium as a dusting powder, suffered from attacks of sneezing and wheezing accompanied by herpetic lesions on the alae nasi. She gave a positive reaction to the scratch test with the lycopodium.

J. H., a man, handling burlap bags, suffered from sneezing, sore throat, edema of the lids and erythema of the face and neck. He too gave a positive reaction to the scratch test with fibers from a particular type of burlap.

INFANTILE ECZEMA AND DISSEMINATE NEURO- DERMATITIS

The human skin is becoming increasingly rebellious to the exposures of our so-called civilized manner of living, adornment and diet. In infancy such rebellions are called infantile eczema and may be classified as contact, infectious, metabolic or seborrheic dermatitis, and atopic when there is a family history of hypersensitization. Classification however is quite impossible at this time, for all such eruptions present the same marked erythema and oozing of the face with scattered areas on the body and extremities. Cutaneous tests are of little value owing to the hypersensitive skin of the infant. Family history is valuable in determining the prognosis; that is, when the disease is atopic. Many infantile eczemas clear up before the end of the second year and the patients remain well. Others, however, persist or recur in later childhood or adult life. These tend to become localized in the neck, the flexures and the dorsa of the hands and assume chronic characteristics, papules, fissuring, excoriations and lichenification, arranged in dark grayish plaques. Years may intervene between attacks. Occasionally this type of disease manifests itself first in the late teens. Many dermatologists call this condition disseminated neurodermatitis; others, atopic dermatitis. I myself prefer the former term, although the latter may be used when there is a positive family history of hypersensitivity. These cases show an eosinophilia, specific circulating antibodies or reagins (not precipitins) demonstrable by passive transfer, and positive intracutaneous and usually negative patch tests. The antigens are mostly protein. White dermatographia may be elicited by stroking the skin. As to etiology, however, the literature is full of contradiction (fig. 6).

A psychogenic origin is advanced by some observers and decried by others; a positive family history of hypersensitivities is reported in about half of these cases. Some investigators find these patients highly intelligent while others record them as of average or below average mentality. Some find seasonal exacerbations worse in summer, while others blame winter climates. Foods, particularly fish and eggs, are accused, as is silk and wool clothing. While I do not credit a psychogenic origin for such disorders, it has been my experience that most patients were fairly intelligent, some extremely so, that less than 20 per cent have a positive family history, that attacks were more pronounced in winter and that acute exacerbations might be induced by worries or mental and emotional upsets.

TABLE 2.—An Analysis of 204 Cases of Dermatitis Showing Relation Between Recurrences and Length of Service

Length of Service	Number of Cases	
	With Recurrence	Without Recurrence
Less than 1 month.....	3	5
1-5.99 months.....	6	10
6-11.99 months.....	5	9
12-19.99 months.....	16	15
2-2.99 years.....	10	10
3-4.99 years.....	11	12
5-9.99 years.....	28	14
10-19.99 years.....	21	11
20 years and over.....	8	10
	108	96

not proved of value. They should be used cautiously, for they may cause severe reactions; this is true also as regards prophylaxis. Conflicting reports are published regarding even the value of *Rhus toxicodendron*. Antibodies have not yet been demonstrated in cases of contact dermatitis, but more delicate methods may yet reveal their presence.

DERMATITIS DUE TO INTERNAL CAUSES

In cases of dermatitis from internal causes, drugs are the main factor causing dermatitis medicamentosa through ingestion, injection, absorption or inhalation. Antibodies have not been demonstrated in drug eruptions. These eruptions are prevalent, for almost any drug may cause a reaction in a susceptible person. In fact, the sudden appearance of any eruption without a systemic disturbance suggests a drug as a possible causative agent. Such eruptions are symmetrical and pruritic and may assume any type or combination of the primary lesions. An interesting group is that of fixed eruptions which do not suggest permanence but tend to reappear at the same site. These are vascular and polychromatic in appearance and are occasionally accompanied by vesicles and bullae. I have seen one case of a generalized bullous eruption in which an area of necrosis on the lower right leg was produced by too large a test dose of phenolphthalein. Cutaneous tests have not proved their value in drug eruptions except in eczematous groups, where patch testing is useful.

Testing at such times, by increasing emotional strain, may well invite disaster. In hospitals, with a house diet and lying on an old mattress, the patient may find relief. A shrewd evaluation of the factor which brought on the attack, questioning on financial and domestic worries and dietary, social and occupational habits may suggest future therapy and certain beneficial tests. In one case an inhalation test with silk in an allergen-free room produced a brilliant cure. However, investigation usually reveals polysensitivity so that the elimination of any one factor rarely brings complete relief. Hospitalization, therefore, does not produce a cure. Such patients recover temporarily but fail to cope with their environment, mental and social, and suffer recurrences until maturity and intelligent self adjustment bring a cure. Credit then commonly goes to the attending physician or to the elimination of such substances as eggs from the diet or silk from the wardrobe. Cases of neurodermatitis disseminata are rarely seen in persons of middle age. Persistent contact dermatitis may present all the clinical characteristics of neurodermatitis. History taking and patch tests, however, aid in making the differential diagnosis. Cutaneous tests are likely to yield conflicting evidence. Negative tests, when the patient is known to be hypersensitive to a given substance, are difficult to explain. The reverse is also puzzling—a positive test without clinical symptoms. Moreover, a test which is positive one day may be negative on another, or vice versa. An explosive reaction may follow the mere ingestion of or contact with a causal factor, while later a similar exposure may prove innocuous. Many factors doubtless contribute to this confusing situation; overexposure to a given substance, fatigue, worry, emotional upsets, intercurrent infection or some systemic disease. Hence both the predisposing and the precipitating causes must be sought, and both may be internal or external.

PATCH TESTS

Patch tests in dermatology are more effective than scratch or intradermal tests. The patch test is based on the principle of specific altered reactivity or hypersensitivity. If a patient exhibits an eczematous dermatitis as the result of hypersensitivity to a given substance, the entire skin becomes sensitized. When this substance is then applied to an intact area of the skin in a manner similar to the initial exposure, a reaction comparable to the original eruption should appear on the test site. How this generalized sensitization is produced is still a matter of conjecture; whether it is spread by means of the blood or lymph or in the skin from one epithelial cell to another. Any dermatologist familiar with a large series of contact dermatitides is at a loss when he attempts to satisfy himself that they are spread by epidermal extension.

In patch tests it is important to duplicate, so far as possible, the original exposure. A list of primary irritants must be established. If a worker comes in contact with a primary irritant during his labors or elsewhere, patch tests are needless. If they are also sensitizers, destructive action may result at the test site, and a generalized dermatitis may follow; for example, oil of cinnamon and oil of cashew nut shell. Tests with stock solutions may suggest possible clues but cannot be accepted as proofs.

Experience teaches discretion. Such tests are rapidly assuming unexpected and unwarranted legal impor-

tance. A court has recently been questioned as to medical practice which failed to apply patch tests. A physician can testify only to results of tests that he himself applied. Whether the test substance was the one which caused the trouble or merely resembled it may be brought into controversy. Tests with stock solutions are inadmissible as evidence. The commissioner at the industrial accident board recently ruled out my opinion because I could not recall whether the insurer or the patient had brought test materials to my office the previous year.

Tests, when corroborated by clinical data, are of value. Cure or renewed attacks should follow elimination or reexposure to the proved irritant. A positive reaction after a week's interval is usually a sensitivity produced by the test itself. Reactions from rubber and dyes are likely to be delayed. After tests have been applied to the skin, the patient should remain under observation for at least an hour; the sites should be examined before dismissal and, if negative, be replaced for from twenty-four to forty-eight hours. The area tested should be examined for several days. An industrial physician in a recent article stated that during preemployment examination he made patch tests with phenol formaldehyde resins in which he "superficially scarified the skin and many of the new workers were found to be hypersensitive, showing a reaction immediately or within twenty-four hours." Evidently the patch test is not yet clearly understood. The skin should never be traumatized before or during the application of test substances but should always remain intact.

PREVENTION

Prevention can be accomplished by education. Public talks to the laity, to employers and to workers are of value. Contacts such as poisonous chemicals and plants should be explained. Few persons are immune to irritants. At our clinic twenty-three paid volunteers allowed poison ivy leaves to be rubbed on their unabraded skins, which were then covered with sterile gauze. Twenty reacted positively in from one to eighteen days, with varying degrees of dermatitis. One subject showed a generalized eruption from this single contact. The public should be taught that drugs are common sensitizers and should become sensitivity conscious. If a dermatitis appears after the use of any drug, that drug should be suspected and eliminated and another drug of equal value substituted in its place. For example:

An intramuscular injection of estradiol benzoate was followed by an area of erythema, edema and pruritus at the site of the injection; this was about 3 inches in diameter. This persisted for about three weeks. The same type of estrogenic substance in a different vehicle was injected with no further trouble.

This prevented an extensive dermatitis such as was reported from repeated injections of theelin, in which case each injection caused an extension of the existing eruption.

Many disasters have been prevented in the past thirty-five years by the Council on Pharmacy and Chemistry of the American Medical Association. As a result of the federal drug and cosmetic act the public is becoming educated to the risk inherent in the use of certain drugs. The Food and Drug Administration has already attempted to prevent the sale of certain drugs without a doctor's prescription. Warning state-

ments are placed on the labels, for example "If a skin rash appears, discontinue use." Reliable drug houses have shown an encouraging spirit of cooperation by discountenancing the indiscriminate sale of dangerous products. In fact the entire industry seems conscious of the advisability of ethical marketing. When the manufacturers of cosmetics also disclose by labels the main ingredients of their products, persons with known sensitivities can avoid possible causes of dermatitis. Labeling is important also in industry, particularly for volatile solvents, essential oils and irritating chemicals. If such substances cannot be eliminated entirely, workers should be instructed and preventive measures instituted. If a drug such as mercury is to be applied to the skin, the patient should be advised to test himself prior to its extensive use.

Case reports are continually augmenting our knowledge of irritants and sensitizers and should prove their value in avoiding cutaneous disorders. However, a useful drug need not be banned because of the risk of a dermatitis when that risk is outweighed by the curative properties of the drug in question. Among such drugs are the arsphenamines, sulfanilamide, the iodides and the bromides. After initial disturbances a patient may become more tolerant of a remedy so that its use can be resumed with corresponding advantage. What is true in the case of an individual drug is true of industry. With proper care and observation a sufferer from industrial dermatitis may learn to adjust himself to conditions that seem decidedly unfavorable. Such experiences are common among bakelite molders, treers and bakers. Proper hygiene, both personal and industrial, is and will remain paramount.

CONCLUSION

Eczema, a symptom complex, denotes a dermatitis caused by a normally innocuous exposure which in most cases has been proved to be external in origin. The term allergy may be accepted according to the definition of a specific altered capacity to react, if the causative factors can be specified, as in the case of bacterial infections. The statement that a patient has an allergic dermatitis or eczema is of no value; it must be demonstrated that the patient with the dermatitis has a specific altered capacity to react, or cutaneous hypersensitivity, to a specific exposure or exposures. The fact that a certain percentage of persons who have suffered from contact dermatoses can readjust themselves to previously harmful exposures would indicate that they have no permanent abnormality as a result of their previous hypersensitivity.

520 Commonwealth Avenue.

The Ordinary Everyday Things.—All mothers frustrate their children, but the mother of the sort I am describing, having no sympathy or patience, increases the inevitable frustration a hundred or thousand fold. Instead of sympathizing with the jealous child she is angry, instead of comforting him when he is miserable she gives him a slap, instead of joining in his play she puts him to bed, instead of taking part in his phantasy life she accuses him of lying. It is not that she uses any particular form of punishment or indulges any special cruelty. It is not that she says or does anything very terrible; but the way in which she does and says the ordinary everyday things of life is what seems to damage the child. When he is treated in this way, it seems to me small wonder that the child develops a greater degree of rage, jealousy and libidinal demand than the average.—Bowlby, John: *The Influence of Early Environment in the Development of Neurosis and Neurotic Character*, *Internat. J. Psycho-Analysis* 21:154 (April) 1940.

PRESENT TRENDS OF SOCIALIZATION OF MEDICINE IN RELATION TO MATERNAL WELFARE

CHAIRMAN'S ADDRESS

LUDWIG A. EMGE, M.D.

SAN FRANCISCO

The complications of modern medical practice resulting from our economic upheavals demand immediate and momentous changes in our professional attitudes. We are confronted with new problems and new ideas which call for a complete change in our ideals. We are told that individualism in our field no longer has a place and that we must organize our forces and prepare for a new tempo in the distribution of medical care. Numerous plans have been drawn and at this particular moment are being tested for the solution of the perplexing health problems arising from the economic changes of the past two decades.

Our particular concern in these plans is maternal and child welfare, which is in dire need of improvement. We have been told time and again that the maternal risk in this country is too high and that better methods must be devised to correct it. Various surveys have shown that the risk is greatest among those who are financially handicapped, and attempts at improvement by various isolated groups during the past twenty-five years have demonstrated that much can be accomplished through group action toward the establishment of maternity centers and educational campaigns. The splendid efforts on the part of the Children's Bureau in Washington to support these commendable movements and provide facilities is well known. The sum total of the experiences of the various groups directed toward the reduction of maternal risk has proved that the results depend entirely on cooperation, efficient organization and adequate funds.

By and large, medical practitioners are individualists and, by tradition, isolationists. Group effort to many means the surrender of these ideals, although there is no proof for this contention. In fact, group action means nothing more than the intelligent coordination of individual efforts. Now, more than ever, is individual effort needed to lower the hazards of childbirth, for they have become the concern of the nation. It is evident that to achieve this the adoption of some plan along the lines of socialization is necessary.

AIM OF SOCIALIZATION

Under the influence of democratic principles and ideals, socialization has come to mean economic preservation and efficiency. Industries are applying its principle in an ever widening scope, and constituted authority has adopted it as the only means of handling the problems created through economic chaos. In the broader sense, socialization aims at the economic betterment of society, and our profession should accept it in that light. If instituted in an orderly and sane fashion to conform with major changes in our modes of living, it is a step forward toward a less complicated community life. All schemes of socialization are predicated on taxable resources or on insurance (compulsory or voluntary). That we interest ourselves in the mechanism of socialization in the field of medicine, therefore, is only common sense and a step in the right direction for our

Read before the Section on Obstetrics and Gynecology at the Ninety-First Annual Session of the American Medical Association, New York, June 13, 1940.

own protection. The application of social principles to medical practice is not new. It has been used in one form or another for many years, particularly as it relates to maternal and child welfare.

Originally a problem handled entirely by teaching clinics and philanthropic institutions, this particular field of welfare work gradually has been entered by municipalities, then by counties, later by states, and most recently by the federal government. All will remember the Sheppard-Towner bill and how it was opposed because it was considered the first step toward control of medical practice by the government. Time proved it otherwise, and had it not been for financial limitations and lack of trained workers the results might have been different. The bill was introduced at a time when economic affluence made maternal needs less evident. The economic collapse of the last decade put it to a strain it was not prepared to endure.

The Sheppard-Towner Act was superseded in 1935 by the Social Security Act, which broadened its scope and permitted the Children's Bureau of the Department of Labor and its affiliated state agencies to improve field nursing, increase the number of maternity and child welfare centers and embark on a more extensive educational campaign. It is evident that it has borne fruit, as witnessed by the steady, though slow, improvement in maternal risk.

NATIONAL HEALTH PROGRAM

The federal government now proposes to enter the field of maternal and child welfare on a still larger scale because of pressure from interested nonmedical groups representing that great proportion of our population unable to obtain low cost medical attention, and because organized medicine is said to have been too slow in improving maternal risk. It is planned to spend for this purpose eight million dollars the first year, twenty the second and thirty-five the third, to be followed by such sums as Congress deems necessary to maintain adequate care for expectant mothers and their offspring. This provision is incorporated in a bill (S. 1620) introduced by Senator Wagner to establish a National Health Program. It has been heard in committee, and a copy of the record is readily obtainable. Those who care to know the opinions of leaders in medicine, labor, economics, farming and various industries concerning the distribution of medical care in general, and maternal and child welfare in particular, should read a copy of these hearings. They are very informative and reflect the needs and demands of the people. I recommend also that they study the proceedings of the National Health Conference and the Conference on Better Care for Mothers and Babies held in Washington, D. C., in 1938. It will enable one to compare the opinions of one's colleagues with those who are clamoring for improvement in medical service. Physicians should be conversant with both in order to meet public challenges.

Briefly, the proposed legislation is designed to permit the states to render increased service to pregnant women and to children through grants-in-aid. It is meant particularly for the improvement of rural conditions and for areas suffering from severe economic distress. This bill authorizes the chief of the Children's Bureau in Washington to determine the financial needs of the various states and allot to them sums of money based on the total number of births in the preceding fiscal year and on other health needs of mothers and children as estimated by state authorities. The proposed legislation differs from the Social Security Act in that it

eliminates the fifty-fifty participation by the states in the provision of necessary funds and proposes to contribute grants ranging from 33⅓ to 66⅔ per cent of the total amounts to be expended under state plans. It is evident, under the Social Security Act of 1935, that states suffering most severely from economic depression, and hence limited in taxable resources, did not receive as much federal support as needed and that states better able to finance their own maternal welfare programs received more than necessary. While there is an improvement over the Social Security Act, it still fails to take into consideration the fact that certain local needs cannot be measured in terms of finances and therefore it may fail to solve some of the pressing medical requirements of such regions. This section of the bill obviously needs revision.

There are incorporated into this bill certain restrictions and administrative rules which make the chief of the Children's Bureau, under the Secretary of Labor, the sole judge in all matters pertaining to the fulfillment of this legislation. It is evident that such a concentration of power may become a dangerous factor. A far-sighted chief, such as the present one, probably would consult with the medical profession regarding needs and methods best suited for a given region. A more arbitrary and politically inclined person, on the other hand, might impose measures which easily could prove obnoxious to the practitioners and thereby defeat the spirit of the bill. I wonder if physicians realize that the distribution of funds for medical care is essentially in the hands of social agencies. This may be an administrative expedient, but it puts physicians in the back seat. We should be at the wheel, and we can be if we insist that all federal medical matters be concentrated in a Department of National Health, as emphasized in the Platform of our Association.

CARE OF MIGRATORY WORKERS IN CALIFORNIA

Until a few years ago, medical practitioners managed very well on their own, and their willingness to care for the sick without material reward was recognized throughout the country. Our present economic situations, however, are changing, and even our contribution of a million dollars or more a day in professional service does not solve the urgent medical needs of certain sections. Take, for instance, our recent experience in California. For several years many thousand disconsolate, underfed and destitute migratory workers poured into the state in a steady stream. Who was to care for their pregnant women and their sick children? Was it up to the nearest local physician or was it the duty of local health authorities to provide adequate and decent care? Or was this a federal responsibility? In many instances the brunt was borne by the local doctor until the problem got beyond him. Regardless of what has been said in sordid fiction, I know from personal investigation that many members of our profession and local health departments did their level best under the circumstances, but it was not adequate. To achieve the desired end, forces had to combine. Improvement came when state, federal and medical forces joined hands to provide means and facilities for relief of the suffering. Today, mobile clinic units follow the workers to the crops, stationary maternity centers manned by part-time physicians and dentists have been established in convenient localities, and every migratory pregnant woman in the state has access to adequate care. Sometimes superstition or ignorance keeps a woman from making use of the facilities offered, but we cannot help that.

Last year 2,259 of 2,932 migratory women were delivered in hospitals, a considerably higher proportion than is true of most rural districts in the nation. This demonstrates what efficient organization and group effort can achieve, and it demonstrates at the same time that the individual physician could not cope with such events. Like emergencies may arise in any state and, while they are primarily the concern of health departments, our profession is bound to be drafted. So why not organize and be prepared?

IMPROVEMENT IN MATERNAL MORTALITY

There is another phase of the maternal welfare problem which I believe can be solved only through some form of medical socialization, and that is the present state of our maternal mortality. All are familiar with maternal risks in the United States as compared with those in other countries. It long has been a subject of concern to most of us and has given us a black eye before the public. What are we going to do about this? Shall we organize and strike at the root of the evil, as a few isolated groups have done, or do we want the government to do it for us? If we expect to assume the leadership in this matter we must prepare ourselves to set aside certain archaic ideas of ethics for the sake of eliminating the incompetent. If we want to be led, then the public, through the federal government, will tell us who can and who cannot attend women in childbirth. Remember the reports on maternal mortality by various interested groups and the impressions they created, not only in their respective communities but throughout the country! There was a great deal of criticism within the profession over these reports, but they did have a salutary effect. They awakened many doctors to the necessity of increasing their efficiency through graduate study, and they stirred up various health agencies to foster better maternal care. Call these efforts at improvement what you please; in the final analysis they are a form of socialization, since they are concerned with group action for the benefit of society.

To show where there is the greatest need for improvement, I have prepared a table of maternal mortality rates supplied by the Children's Bureau of the United States Department of Labor. It is arranged according to the number of deaths per state in 1938 as compared to 1936. The table speaks for itself; each should make one's own deductions.

Let me say in passing that the Negro population of all states has a higher mortality rate than the white population. This, no doubt, explains the alarmingly high maternal mortality rates in certain Southern regions where the proportion of Negro births is highest. Negro births in the Southern states fall for the most part into rural districts and are accompanied by a far greater mortality than in the Northern states, where the colored population concentrates in towns and cities. The situation evidently will have to be remedied through some social scheme sponsored by constituted authority and made effective through medical cooperation. If the number of Negro physicians and public health nurses is not sufficient to cope with the problem, then some other way will have to be devised, preferably through a combination of public health forces and county medical societies.

As a matter of record I wish to point out that, notwithstanding recent statements made at health conferences and hearings, maternal risk in general is decreasing steadily and maternal mortality rates have improved universally. I am certain that medical group

efforts, educational campaigns fostered by teaching institutions, the Children's Bureau, medical societies, numerous state welfare agencies and the American Committee on Maternal Welfare have contributed immeasurably to this achievement. The development of obstetric graduate study is the next step to improve the situation further. It too is a cooperative effort and a phase of socialization, since it aims to improve medical practice for the amelioration of the health of the public.

HOSPITALIZATION

There are many other phases in the care of the pregnant woman which cannot be solved except through some social scheme. Take, for instance, hospitalization. Today it costs roughly from \$5.50 to \$6.50 a day to house, feed, nurse and deliver a patient and take care of the baby on the basis of a ten day hospital stay, with an additional dollar or two a day if a physician-anesthetist is employed. It is evident that this puts hospitalization beyond the reach of a very large proportion of our pregnant women. This phase of the

Maternal Deaths per 10,000 Live Births

	1938	1936		1938	1936
North Dakota.....	24	43	Idaho.....	41	44
Connecticut.....	26	41	Kansas.....	41	57
Minnesota.....	28	42	Kentucky.....	42	56
Rhode Island.....	28	40	Oklahoma.....	42	62
Wisconsin.....	29	42	Colorado.....	45	71
			Maine.....	46	51
Utah.....	30	44	Arizona.....	48	91
Nevada.....	32	56			
Wyoming.....	32	50	North Carolina.....	53	66
California.....	33	47	Virginia.....	53	58
Iowa.....	33	46	Arkansas.....	55	70
Montana.....	33	55	Delaware.....	56	71
Washington.....	33	52	District of Columbia	56	69
Illinois.....	34	45	Tennessee.....	56	70
Nebraska.....	35	50	Texas.....	56	69
Oregon.....	35	54	New Mexico.....	57	74
South Dakota.....	36	46	Louisiana.....	59	57
Indiana.....	37	48	Mississippi.....	60	69
Michigan.....	37	52			
New Jersey.....	37	40	Georgia.....	67	82
Vermont.....	37	50	Alabama.....	68	74
Maryland.....	38	47			
New Hampshire.....	38	48	Florida.....	75	81
New York.....	38	49	South Carolina.....	79	90
Ohio.....	38	50			
Massachusetts.....	39	49			
Missouri.....	39	61			
Pennsylvania.....	39	52			
West Virginia.....	39	53			

problem cannot be solved by philanthropic aid or by the present setup of county hospitals, many of which hardly deserve that designation. Today even those of moderate incomes often cannot afford adequate hospital care unless it is provided through hospital insurance. However, since it is more expensive to hospitalize maternity patients than others, voluntary insurance groups are slow to include this service in their policies. It will take some time to learn whether, under the present rates and restrictions, this service ultimately can be provided. In the meantime, from 20 to 70 per cent of our expectant mothers, depending on whether they are living in urban or rural districts, are forced to have their babies at home. If it is to be the ultimate national aim to have all babies born in hospitals, the financial burden must be borne by constituted authority through some means of taxation. That this requires the setting up of some social mechanism needs no comment. Certain of our lawmakers contemplate the institution of a nationwide hospital building program which, I fear, in the proposed form is not entirely based on necessity. I cannot go into the details. They can be read in a bill (S. 3230) known as the Wagner-George Hospital Construction Bill, which recently was discussed in THE JOURNAL. It is a very ambitious and

expensive scheme of socialization which throws the ultimate maintenance cost onto the community and still does not solve the individual hospitalization cost, although it is claimed that this would be achieved through funds provided by the National Health Act. I am unaccustomed to large figures and cost sheets, but I can see that even the sums set up by that act would not nearly cover the cost of hospitalization of expectant mothers now delivered at home, to say nothing of compensating the attending physician. If the federal and state governments want to increase maternity hospitalization they could do so by adding to or subsidizing present facilities with a tremendous saving in capital investment and in administrative cost. Here again cooperation and solidarity in the medical profession can play an important role. An equitable and satisfactory distribution of the burden of the cost of hospitalization for that large group now not eligible or not able to afford it can come only through a plan of socialization, and our profession can show the way to the most economic solution of this problem.

Time does not permit the discussion of many of the interesting details which enter into social schemes connected with maternal welfare. The question of compensation for adequate maternal care I leave out purposely, because it cannot be answered without considerably more experience and study. However, this phase will have to be watched for the tendency is to put the valuation of maternal care at the end of the list.

POSITION OF PHYSICIANS IN ADMINISTRATION

We are charged with the responsibility of watching over the welfare of mothers and babies and we should let it be known that we want a hand, not only in their practical care, but in administrative matters concerned with the distribution of funds for such purposes. It is high time that the profession make itself heard, and it is to the interest of every practitioner to lend a hand. I feel very strongly that this subject must be brought out into the open so that the people with whose care we are charged can learn our ideas regarding national health programs. If we ever want to be heard, we must raise our voices now, and when we do, we must speak with conviction and be prepared with practical suggestions. Health legislation affects you and me vitally, and, since it is evident that the health needs of certain groups can be supplied only through some governmental subsidy, by all means participate in the shaping and enforcement of such legislation. Do not relinquish leadership in medical matters, for by nature of your training and experience you are best prepared to lead in that field. Above all, remember that the burden of maternal mortality rests on our shoulders, so why not make a serious, united effort to lighten that burden? A little more cooperation, a little more frankness and a lot of good will would go far in achieving this for us. Prove to your community that it must provide better facilities for its expectant mothers and aid in the establishment of maternal and child health centers. Create study groups and discuss your problems together, and invite particularly proficient practitioners to discuss them with you. What has been done to improve maternal risks in the large centers may be accomplished in the smaller communities and rural districts if your respective county societies will determine the causes of deaths in childbirth in your own localities and study the existing facilities for maternal care. This will require an effort, and some feelings may be hurt, but why not look at it in the spirit

of service? Individualism need not be lost. Many of you belong to civic societies and you take pride in being of service to your fellow men. Has not medicine ever been dedicated to service? The time has come for all of us to apply this principle to changing needs, but it cannot be done by merely quibbling over the philosophy of social trends; it requires action—organization and cooperation—and this must come from within our ranks.

2000 Van Ness Avenue.

INJURIES OF THE KIDNEY

WITH SPECIAL REFERENCE TO EARLY AND
ACCURATE DIAGNOSIS THROUGH
PYELOGRAPHY

JAMES C. SARGENT, M.D.

MILWAUKEE

What with modern high powered automobiles and the ever lengthening superhighways of America, there is a sickening tide of broken and torn bodies streaming steadily into the admitting wards of our emergency hospitals everywhere. With a public still sadly indifferent to the horror of this mounting holocaust, a responsibility of particular weight rests on the profession to whose lot it falls to comfort and to heal. While those of us committed to the practice of urology find ourselves involved in this mess perhaps less frequently than our friends the orthopedists or the general surgeons, present day accident surgery is freighted with perplexing urologic problems sufficiently common and of such wide variety as to command our most thoughtful attention.

Not alone have recent years brought an astounding increase in the number of cases of injury involving the organs of the urinary tract but at the same time they have brought such astonishing changes in their type and degree that several new questions of major significance have risen to plague us. Not the least of these—and I venture here to inject perhaps the most confusing and unanswered of them all—is that of the safest and best methods to be used in the early recognition and the precise classification of kidney injuries. It is to this particular phase of accident surgery that this paper is addressed.

To any one called on to serve as consulting urologist on the staff of a sizable emergency hospital, it must soon become apparent that the mine run of urinary tract injuries are quite symptomless and obscure on admission. Indeed, so obvious and commanding are the symptoms of the other accompanying injuries and so silent those of the kidney or bladder that important hours are often lost unless the prompt discovery of kidney or bladder injuries is assured through the routine inspection of the urine to note the presence or absence of blood in all accident cases at the time of admittance. Without such a routine, the patient with a fractured pelvis may go many hours before her ruptured bladder is discovered or the man unconscious from skull fracture even bleed to death from an unsuspected kidney injury.

Striking too is the observation that frank hematuria can be noted in bad accident cases and yet the most painstaking search fail to reveal any demonstrable urinary tract injury and a few days see the urine again clear and the patient apparently none the worse for

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the wear. Particularly is this likely to occur in those accidents in which bodies have been jarred violently by falling, by being slammed against a tree while coasting or in a head on collision with another car. Along with punctured lungs, broken limbs and skull fractures, a sizable number of these heavy body injuries are found to show grossly bloody urine perhaps clearing completely within a day or two but eloquent evidence of the fact that the renal tissue of a kidney is too soft and friable to be slapped against the lumbar spine without likelihood of some degree of injury.

Injuries of the urethra and of the bladder are so classic in their method of occurrence and they are associated with such characteristic local effects that any reasonable investigation is bound to lead to their prompt discovery and, once discovered, their treatment is quite routine. The trouble does not lie there.

Rather, the real problem in injuries of the urinary tract lies in that group of cases in which the kidney has been hurt. And the reasons are not hard to find. Here, unlike injuries lower down the tract, there is not the likelihood of urinary extravasation to make immediate surgical intervention imperative. Here hemorrhage alone is a danger and then only in the most occasional of cases. Here surgical intervention is a formidable procedure and altogether too risky to be undertaken without real cause. Here, as a matter of fact, experience teaches that the vast majority of injuries are far better left alone. Indeed, the problem is not so much that of detecting the presence of kidney injury as it

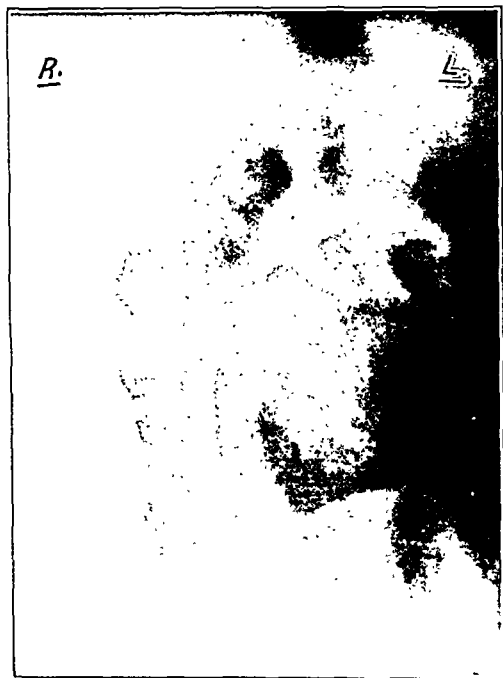


Fig. 1.—The contour of the renal pelvis is well preserved despite substantial fracture of the renal cortex.

is of knowing the exact extent of the injury and whether or not operation can safely be avoided.

In approaching the answer to this question there is nothing whatever that ranks with a clear understanding of the exact extent and severity of the kidney injury itself. Of course severe shock when present may be of outstanding significance. Signs of progressive hemorrhage may be quite commanding. Injuries elsewhere in the body may tend to dominate the whole procedure.

Even perirenal extravasation of urine with the likelihood of later abscess can demand consideration. Completely overshadowing them all, however, stands the paramount question How badly is the kidney hurt? Is it fragmented and macerated beyond hope of spontaneous repair? Or are its bruises and tears within

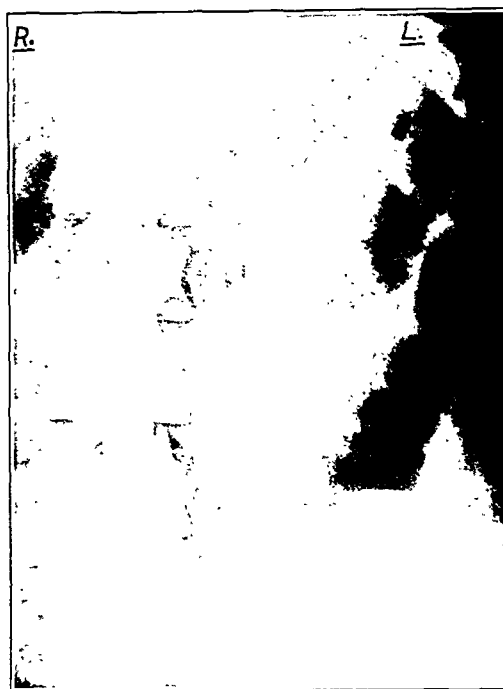


Fig. 2.—The contour of the renal pelvis is completely lost. The kidney was found fractured beyond possible repair.

the bounds of good healing if merely left alone? On the answer to that question, more than anything else, rests intelligent judgment as to proper treatment when kidney injury has occurred.

Two cases are submitted in illustration of this point:

A middle aged man who had been bowled off his feet two hours before by an automobile entered the hospital in moderate shock. Urine obtained by catheter was found to be quite bloody. Rapidly increasing pain and rigidity suggested left kidney injury and careful urologic studies were made (fig. 1). It was perfectly obvious from this retrograde pyelogram that frank fracture of the left kidney had occurred. But it was also obvious that the kidney and its true pelvis were sufficiently intact to promise good healing. After eight days of bed rest the patient saw so little excuse for his hospitalization that he signed his own release and left. Urologic studies made in connection with litigation the following year demonstrated this kidney to be functionally and anatomically indistinguishable from its uninjured mate.

A grown girl too drunk the night before to know how she had been hurt came to the hospital about noon frightened over her bloody urine. Nor, oddly enough, was there a bruise or a scratch on her body to hint the presence of her injury. A growing dull ache over her left kidney suggested that it might be the source of her bleeding. Cystoscopy showed blood rolling from the left ureteral orifice. This retrograde pyelogram disclosed complete loss of continuity of the renal pelvis and indicated that the kidney to be injured beyond possible repair (fig. 2). Her general condition remained quite good and operation seemed both safe and wise. The kidney was found broken completely in two with an upper and lower half dangling loosely in a quart of clotting blood, one anchored by a few viable shreds of pelvic mucosa and the other by the skinned renal artery and vein.

Several authors have written, praising intravenous urography in the study of renal injuries and calling

particular attention to its simplicity and complete safety. Be all of that as it may, there is much to question its worth except, perhaps, as the roughest sort of a preliminary survey in those accident cases in which the urinary tract is suspected. Most intravenous urograms made on patients just admitted after serious accident

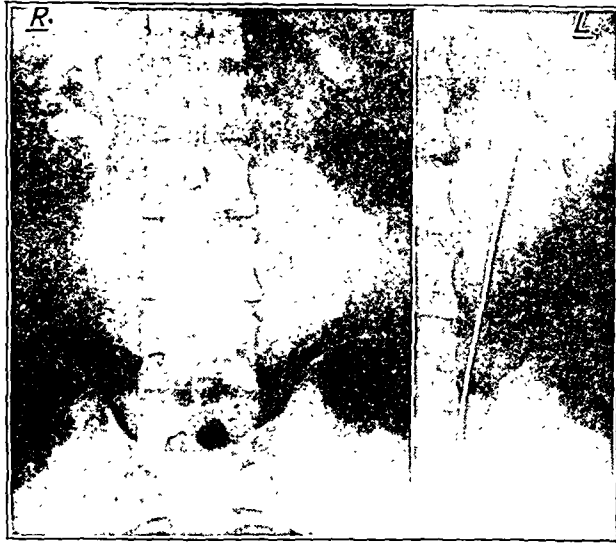


Fig. 3.—The intravenous urogram showed no elimination of the drug by the injured kidney. Yet the left pyelogram proved the kidney to be quite intact.

are, in my experience, quite valueless. If the patient is seriously hurt he is likely to be in shock, and shock is a poor circumstance in which to expect even uninjured kidneys to do a reasonable job in eliminating the drug in sufficient concentration for good pyelographic detail. Ileus, more or less severe, is also quite common and adds to the difficulty of getting clearcut, distinguishable outlines of the pelvis and calices.

Entirely apart from these general considerations, the intravenous urogram finds serious limitation in the fact that, far more often than not, a kidney stops secreting urine promptly on receipt of injury, whether that injury is one of simple concussion or of a severe shattering of its parenchyma. Not only does this usually leave the surgeon without the information he so seriously needs, but by what appears to be complete absence of function it may give an impression of kidney damage thoroughly false and gravely misleading.

In support of this contention I submit a twenty minute intravenous urogram, together with the left half of a retrograde pyelogram (fig. 3), both of which were made quite soon after the patient's admission. The case was one in which the type of violence and the severity of symptoms suggested the likelihood of serious left kidney injury. While the right kidney was well visualized in this intravenous urogram, on the left side nothing but a faint streaking of dye in the kidney region could be seen. Had this intravenous urogram been taken at face value, one would have expected to find the left kidney badly damaged. Yet the retrograde pyelogram proved the kidney completely intact except for an insignificant medullary tear and several days of bed rest saw the patient well and home again.

Retrograde pyelography, done on a proper x-ray table and with a Bucky diaphragm, must come to be routine in all accident cases in which injury to the kidney is suspected. I would take issue even with those who point to the supposed hazards of such a bold regimen. Using the newer drugs and with sterile

technic, no serious harm can possibly come from retrograde pyelography—certainly nothing to equal the danger of case management without it. A good retrograde pyelogram will prove beyond reasonable doubt whether or not renal injury has occurred. Of vastly greater importance, however, it will usually show if the parenchyma and the pelvis have been shattered beyond all possible hope of decent healing. With the contour of the renal pelvis reasonably well preserved, even though frank rupture of the parenchyma may be quite evident, one does not expect serious consequences to ensue and a masterful indifference on the surgeon's part is quite likely to see the patient and his kidney both whole and well again. Conversely, if the pyelogram shows the continuity of the pelvic cavity blasted beyond recognition, there can be no hope whatever for the kidney and but little for the patient unless a propitious time for nephrectomy can be found.

Two cases have been chosen to illustrate the truth of these observations:

A young man who had tumbled down through six floors of scaffolding suffered nine more or less serious bone fractures along with lesser injuries. He entered the hospital in profound shock and was unconscious from severe brain concussion. After several hours of supportive treatment he rallied sufficiently to permit a thorough study of his injuries. The catheterized urine was thick with blood. Severe pain and boardlike rigidity soon settled over the entire left side and back. Cystoscopy showed blood running from the left ureteral orifice. The retrograde pyelogram (fig. 4) gave eloquent proof of the presence—and incidentally the relative inconsequence—of his renal injury. Particularly one should note the unbroken contour of the entire pelvis and its three main branches while the fog of pyelographic solution floating between upper and middle calix demonstrates the location and limited extent of the parenchymal fracture. This patient was months in the hospital following his accident, but except for his bone injuries he might well have been out and at work within the week.

A daughter just reaching womanhood had the misfortune to be shot in the back by her degenerate father. The bullet



Fig. 4.—Retrograde pyelography proved the kidney pelvis completely intact. A small fracture of the renal cortex may be seen spreading between the upper and middle calix.

entered at the left of the upper lumbar spine, emerging high in the left axilla. On admission her clothes were noted heavily blood stained but there was no indication of alarming hemorrhage. She was neither in shock nor in material pain. However, as hours wore on her pulse began to quicken. Pain, tenderness and rigidity localized in the left hypochondrium. Distention and vomiting appeared and increased steadily. Indeed, all signs seemed more and more to point to an abdominal

injury—that is, all except the heavy bloody discoloration of the urine. A retrograde pyelogram (fig. 5) was promptly made, whereupon it became evident that the left kidney had been caught by the bullet in flight and that severe damage had occurred. Indeed, the film seemed to indicate all but the extreme upper pole of the kidney to have been shot completely away. True to this prediction, operation disclosed a quite normal upper pole with the rest of the organ pulverized beyond recognition. With this kidney remnant removed and two small wounds in the large bowel located and closed, we hoped that we had spared her life. But the paths of bullets are notoriously weird and devilish, and a coroner's inquest came along in due time to enlighten and deflate us. Through all our error and

mits quite exact interpretation and even then if substantial injury seems to be present.

4. Finally, I would reiterate my firm belief that it is in the retrograde pyelogram—and there only—that one can find substantial, dependable and consistent help in determining when and when not to operate on a kidney that has been injured.

324 East Wisconsin Avenue.

ABSTRACT OF DISCUSSION

DR. ROY B. HENLINE, New York: Dr. Sargent's discussion of renal injury has stressed the value of retrograde pyelography in suspected renal injury. Such a procedure, done under sterile precautions, should afford more accurate information regarding the extent of the renal damage. Using the newer contrast mediums for pyelography, which may readily and harmlessly diffuse with the blood, should add no additional hazard to a patient with a ruptured kidney. One has no reason to regret the performance of retrograde pyelography in these cases, and in several instances more precise information regarding the condition of the kidney has been obtained than was possible by excretory urography. Too many general physicians rely on the erroneous information often obtained from excretory urography. However, many such injuries can be diagnosed by excretory urography alone. Stirling reports a satisfactory diagnosis in twenty-three of thirty-four patients with ruptured kidney by excretory urography. One should not hesitate to perform a retrograde pyelogram in any instance in which the diagnosis and extent of the injury are in doubt or in which the kidney or renal pelvis is not well outlined by an excretion urogram. Many cases reported as ruptured kidneys are merely contusions and require bed rest and supportive measures but no surgical intervention. A true rupture of the kidney, resulting in gross injury to the pelvis, cortex or capsule, represents serious renal damage. These patients should be operated on as soon as the diagnosis is made, provided shock and other injuries will permit. To postpone surgery in these operable cases is poor surgical judgment. The literature contains many such cases treated conservatively too long with a subsequent loss of the kidney or even life. Surgical intervention, if performed early, may preserve a severely damaged kidney, yet the degree of shock must first be determined and treatment instituted for its control before surgery is begun. The most conservative treatment for these patients is prompt exposure of the kidney, repair when possible or early nephrectomy. When doubt persists concerning the extent of the renal injury after all diagnostic procedures have been done, an early exploratory operation is preferable to prolonged expectant treatment.

DR. GEORGE F. CAHILL, New York: Dr. Sargent's paper is timely. Too often diagnostic methods are used by those not familiar with them. In tumor of the kidney an intravenous urogram may not establish a diagnosis but may need retrograde pyelography. So too in renal injury. Renal injuries vary. They may be only a minor portion of a profound injury. With penetrating wounds of the abdomen the kidney is often not a major part of the picture but is obscured by intestinal or other injuries and in the late war the infrequency of renal injuries was due to the fact that most of those seriously wounded died on the field. When the kidney is the major trauma there may be many sources. Automobile accidents are frequent causes especially to those occupying the rumble seat. The symptom most frequently seen is hematuria. When it occurs it should be investigated. I do not see any objection to the use of an intravenous urogram in such cases. If the patient is in shock naturally that condition should be relieved by transfusion and other therapeutic aid and then the intravenous urogram done. The secretion from the uninjured kidney shows that it is present. The injured kidney may or may not secrete. If it does and well, then the injury most likely is not severe and expectant treatment is in order. If the kidney does not secrete and an increasing hematoma is present in the flank, then, operation being contemplated, a retrograde pyelogram may be done. If marked local hemorrhage is present, repair of the kidney must be early if the kidney is to be saved. Infection occurring in a

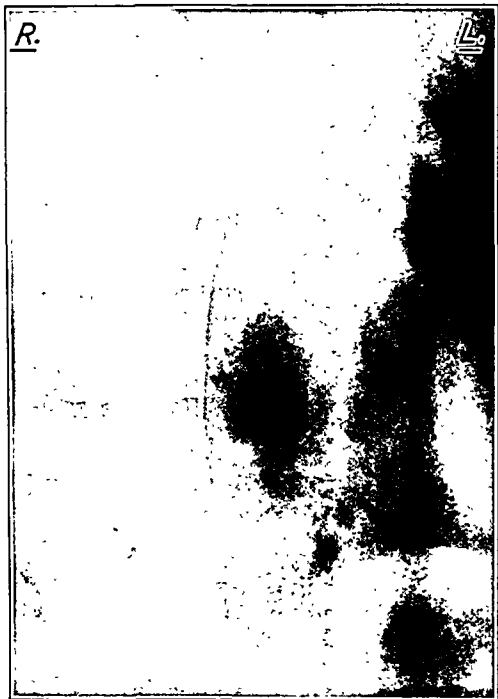


Fig. 5.—In this gunshot injury retrograde pyelography proved of uncanny accuracy in predicting that, except for an intact upper pole, the kidney would be found shattered beyond recognition.

confusion, however, there was one feature of her case that was perfectly clear from the very start. Thanks to our pyelogram, we were never in the slightest doubt about the condition of her injured kidney and what had to be done about it.

CONCLUSION

In closing this scanning recital of certain observations concerning kidney injury permitted through many years of an active emergency service, I should like to stress from among them:

1. Immediate examination of urine, either voided or catheterized, must be made absolutely routine in all accident cases. Considering the danger that lurks in hemorrhage and particularly the terrible consequences of urinary extravasation when it occurs, altogether too much is at stake to neglect this simple and easy precaution.

2. Gross hematuria in accident cases demands absolutely accurate diagnosis. Many times it proves to be of no particular consequence, but many times also it bespeaks an injury of first magnitude.

3. Intravenous urography can be quite useful as a scout procedure in those accident cases in which the urinary tract is suspected. It must be followed by more exact studies, however, unless sharp outline per-

traumatized kidney usually ends in destruction of the kidney. Retrograde pyelography may increase the incident of infection but if one cannot succeed in establishing the renal damage by intravenous urography one then must use other means for its estimation.

DR. W. CALHOUN STIRLING, Washington, D. C.: My experience has been that in the majority of the cases of injuries of the kidney the diagnosis can be made by intravenous pyelography. A recent review of thirty-four cases gave a positive diagnosis in twenty-three, and in only seven instances was it necessary to do a retrograde pyelogram. I believe that instrumental pyelography should be reserved solely for cases in which bleeding continues with unsatisfactory pyelograms. In the presence of severe contusions the first intravenous pyelogram may be unsatisfactory, whereas if it is repeated in from twenty-four to forty-eight hours it will frequently show a good shadow. A majority of the cases reported as ruptures of the kidney are only contusions and respond to conservative measures. My experimental work and clinical studies indicate that, in the presence of severe injury to the kidney, operative intervention is more likely to give a good result than is the conservative method. The literature shows an increasing number of cases with permanent partial loss of function in which the kidney was allowed to heal spontaneously. I have found that when early surgical intervention is instituted, that is the capsule incised, clots evacuated, gauze packs inserted or fat pads sutured over the lacerated area, functional restoration of the kidney will in most instances result. Goldblatt and his associates have shown that hypertension may be produced experimentally by partially clamping the renal artery. Weiss and Parker estimate that pyelonephritis is responsible for at least 20 per cent of the cases of malignant hypertension due to vascular changes. Severe injuries of the kidney produce marked vascular damage which may later cause ischemia of the kidney, followed by hypertension. Patients with renal injuries should be watched for evidence of hypertension. The loss of blood in renal injuries makes anemia an important factor to consider during the convalescence. This complication was not due to the simple loss of blood but to the liberation by the injured kidney of some substance capable of causing toxic destruction of red blood cells. Possibly the degeneration of kidney tissue releases some toxic substance capable of affecting adversely the red blood count and probably the blood pressure. Fat was found to be much superior to muscle in arresting hemorrhage. It is my opinion, based on an experimental as well as a clinical study of a series of cases, that if the kidney is severely injured one should always explore and institute conservative surgical packing, suture and drainage.

DR. VINCENT J. O'CONOR, Chicago: Apropos of Dr. Sargent's paper, practically all of which I agree with, I wish to point out one inference which he makes with which I thoroughly disagree and which I think, since these proceedings are a matter of widespread printing in *THE JOURNAL*, should be clarified. That is with regard to the length of rest in the cases treated palliatively. Dr. Sargent said in certain instances that individuals could be back at work in a few days following a rather massive hemorrhage which cleared up quickly. In three instances in my own experience in which a more or less minor kidney injury, at least from a clinical point of view at the time of the injury, apparently responded successfully to palliative treatment the individuals, against orders, went back to an active life and all three of them returned with massive hemorrhage which necessitated surgery, coming on as long as four weeks after their discharge from the hospital. One of these patients, who had a massive hemorrhage which lasted only twenty-four hours, responded quickly to four or five days of rest in bed, left the hospital against orders on the tenth day, and returned three and one-half weeks later with a kidney which was completely broken in two following the lifting of a heavy suitcase. Two boys with football injuries were allowed to return to active life. Both resumed playing football within three weeks and both returned with massive hemorrhage which necessitated surgery. I believe that these patients who are treated palliatively should be kept at rest, certainly a period of two weeks, and that their physical activity should be limited for from four to eight weeks at a minimum.

DR. JAMES C. SARGENT, Milwaukee: In making a point of the fact that many renal injuries prove to be quite minor and soon healed, perhaps I gave the impression that I underrated the importance of prolonged bed rest when real injury has occurred. However, I wish it clear that I agree with Dr. O'Connor in the wisdom of keeping these patients down on their backs for a considerable time.

GEOGRAPHIC VIRULENCE OF MASTOIDITIS

MERCER G. LYNCH, M.D.

NEW ORLEANS

For some time the question of geographic variation in the incidence of mastoiditis has been of interest and an attempt at an explanation has thus been undertaken. There is much literature regarding climate in general terms. The weather and season function together as the most important environmental factor from the time of birth to the time of death of an individual. Acute infections of the mastoid reach their peak in the spring following the cold weather, not in the summer, and do not again begin to rise until the fall, when changes, often sudden, are seen.

Throughout the United States there is every variety of climate and of weather conditions. Too, one sees a great variety of peoples from every nation scattered throughout the country. These people and their respective living conditions as well as their racial immunity make them susceptible or resistant to different disease conditions.

An organism virulent to one group of individuals may have little or no effect on another group, and the reverse may be the case. Different diseases are also more prevalent in some localities than in others. However, *Streptococcus haemolyticus* is universally found throughout the country. Of nasal cultures taken at random throughout the country, 50 per cent of them from any area showed streptococci and the rest were made up of other organisms, so that truly the streptococcus is found in every locality, as it is the most common organism cultured at the time of operation on the mastoid.

Why is it that along the Gulf Coast from Texas through Florida there are relatively few cases of mastoiditis in proportion to the population? As we progress northward along the Eastern Seaboard the incidence and number of cases steadily increase until in Massachusetts and Maine the peak is reached. The same procedure is true for the Mississippi Valley and the country west of the Mississippi. What part does climate play, especially in those localities in which the climate is so variable, and what part do diet, the habits of the population in regard to these different localities and climates, the foods and the incidence and degree of illness of the population play? All these questions fill a rather large order, but an approach has been made to arrive at some conclusion as to just why this should be.

We who live in the deep South in proportion to our population see a rather small percentage of mastoiditis. As one journeys northward, the incidence increases in proportion to the population until the peaks are reached in the northern limits of the United States.

Through the cooperation and assistance of men in other cities throughout the United States, cultures of hemolytic streptococci have been received and indi-

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vidual studies made under different conditions of climate, diet, exercise and illness, the guinea pig being used as the host.¹ When the cultures were received all were transplanted to blood agar and then standard solutions were made so that all solutions were of equal strength for experimental and testing purposes. These solutions were all subjected to various temperatures of heat and cold such as are found throughout the country and to sudden changes in temperatures such as are found in certain localities. Those organisms obtained from the areas having such changes were more resistant than those taken from more uniform climates, where many were inhibited or killed. Therefore the organisms themselves lose some of their virulence and living powers when accustomed to a more uniform climate. But those that remained became in time as virulent as the organisms accustomed to such changes.

Animals of the same age were injected intraperitoneally with the original solutions. Those cultures received from the Middle West and Northeast sections of the country when thus injected produced early peritonitis and death as compared to a longer illness in those from the Central and Southern states.

Animals were then placed under conditions simulating their respective climates for a period of time and the organisms reinjected. The death rate was increased as well as the degree of illness, and the duration was shortened for those animals receiving solutions from the North and the East, the degree of illness increasing as well as the duration of the illness lengthening as one approached the southern climate. These animals, killed and examined post mortem at various stages of their illness, showed interesting conditions. Those injected with the first group showed an early tendency to spread, with little walling off of the infection. The animals that survived the first period of illness showed a late tendency to walling off of the infection. These corresponded with the conditions found at autopsy of animals that succumbed, showing generalized peritonitis with localizing areas or pockets which were walled off.

The animals injected with the second group showed a tendency to an earlier walling off. Many of these survived and showed a completely walled off abscess. However, the tendency was to an early walling off, then slow breaking down of the abscess and a final generalized peritonitis. To draw conclusions, it would seem that early operation is indicated in the first group, whereas one may be inclined to follow the progress of the disease in the second group, but generally it is advisable to operate in both cases, the main factor being time.

Animals were placed under conditions of warmth and sunlight and fed high caloric and high vitamin diets. They were then injected with the most virulent strains from the North and the East. Likewise animals were again placed in cold climates with little sunlight and limited space for exercise, and these were injected with the strains from the South. Of the first group the virulence was markedly reduced, although they still showed a tendency to an early death rate as compared to the same group given the injection from the Middle and Southern states. Those receiving injections of the lesser strains but under the colder habitat showed a lowered resistance and an increase to early develop-

ment of infection. From this it is concluded that those areas of the country where the climate varies markedly, where extremes of cold are encountered and where open air exercise is thus limited, over a period of time the resistance is lowered and the population is thus more susceptible to infection—this, coupled with the fact that the infection gains virulence because there is less in the natural elements to combat and decrease the virulence. By these factors are meant fresh air, sunlight and exercise.

Clinically, these facts are substantiated by reports showing that the highest incidence of mastoiditis is in March. This peak is reached after a gradual rise beginning in December and January, or at the onset of the extremes of cold. After March there is a steady decline, until the low point is reached in August, the time of maximum sunshine and, although hot, a more regulated and even temperature.

Of the 100 cases of mastoiditis studied by Tomb, the majority were in children, but it is noteworthy that twenty of these patients were housewives who had nursed children with infections of the upper respiratory tract. They had contracted the infection and developed otitis media and mastoiditis. These cases occurred in the winter months when there were poor ventilation of rooms and little or no time for sunshine or fresh air. These conditions are also seen among interns and residents coming from warm climates to be established in hospitals in the East or West and likewise those from the East going South. The majority of these men have a longer period of sickness against their records and are more prone to complications than are the interns who remain in the locality or area to which they are acclimated.

A great deal of work has been done with vitamins in connection with the prevention of disease, the building up of resistance and the elimination and healing properties of tissues in which these vitamins have been used. Space does not permit of a detailed report, but certainly work in this regard shows that, along with the elements of climate, exercise and fresh air, diets rich in vitamins make for better resistance of the patient and a greater facility to throw off infection than by those fed only ordinary diets with no regard to vitamins. Climates vary throughout the country and so do organisms. Individuals likewise vary and are more susceptible or resistant. Generally in milder climates the organisms are themselves less virulent and, because of open air ventilation, sunshine and more access to natural vitamins, the resistance is increased. All these factors must be taken into consideration in an explanation of the geographic virulence and incidence of mastoiditis.

921 Canal Street.

ABSTRACT OF DISCUSSION

DR. NOAH D. FABRICANT, Chicago: It is possible for any number of environmental factors, such as emotion, diet, infection, intoxication and fatigue, to influence a person, but it is extremely difficult to evaluate them. The weather, however, can be measured. Thus, daily temperature changes are measurable, as are likewise barometric pressure, daily average wind velocity, sunshine and daily precipitation. Every physiologic adjustment necessitated by weather alteration is apt to find reflection in any region of the body that is inadequate. This will find expression either in unusual symptomatology, in change in function or in actual pathologic change in the various organs of the body—factors that are measurable. Consequently we are able to measure both the stimulus, i. e. the weather, and the effect on the human being, i. e. the clinical, biochemical and vasomotor changes that are induced in man. We must adjust ourselves

1. The following men cooperated in sending cultures and only by this means was the work completed: Drs. Fred Pollock, Chicago; Paul Mertins, Montgomery, Ala.; Lester Brown, Atlanta, Ga.; Merrill Wattle, Jacksonville, Fla.; Fred Oden, Boston; Wallace Dean, St. Louis; Harold Smith, Pomona, Calif.; John Shea, Memphis, Tenn., and Fred Harned, Hopkinsville, Ky.

periodically to two wholly different types of atmosphere or air masses. We speak of these as polar air masses (cold fronts) or tropical air masses (warm fronts). Chilling of the body surfaces causes constriction of the blood vessels of the skin and this is followed by a constriction of the blood vessels of the nasal mucous membrane. A prolonged ischemia of the nasal mucosa reduces the local resistance and favors infection. Local chilling of the body surfaces is often induced by inclement weather. In the wake of a cold front there is a change in the functional status of the mucous membranes of the nose and throat. From a few hours to one or more days may elapse before the clinical symptoms make their presence felt. Although one cold front may be passed without instituting harm, it is often the repeated or superimposed cold front that results in further damage. In a study of the onset of acute otitis media and mastoiditis, I have found that the precipitation of these diseases occurred most often when there was a fall in the atmospheric temperature. The vasomotor and biochemical changes induced in the human being by the passage of a cold front are accompanied by vascular spasm, increased blood pressure and a relative increase in pH . Gradually the vascular spasm is dissipated, the blood pressure falls and the tissues become relatively more acid and hydrated. At such a time the individual is apt to experience the feeling of fatigue, and during this period bacterial penetration is more apt to occur. Changing environment produces changing energy demands on human organisms that are no longer adequate. Under the continuous pendulation of temperature, humidity and barometric pressure the population constantly swings from a phase in which the vascular spasm is enhanced to one in which vascular dilatation is augmented, and vice versa.

DR. LESTER A. BROWN, Atlanta, Ga.: I have gathered information from each individual record of mastoiditis of three Atlanta hospitals covering a period of six years, 1934-1939 inclusive, using this span of time because of the discussion that follows the present use of sulfanilamide and its derivatives on the incidence of mastoiditis. This comprises an estimated one half total Atlanta survey. It is divided into the three years before the introduction of sulfanilamide and the three years after. In the first group the total number was 197, in the second 200. Of the first group 43.1 per cent were male, in the second 50.5 per cent; 46 per cent were right in the first group as compared with 56 per cent in the second; 13.7 per cent were chronic in the first group and 25 per cent in the second. In the group preceding sulfanilamide 5.56 per cent had complications, while in the group after the use of sulfanilamide complications appeared in 8 per cent. The mortality in the first group was 3.04 per cent and in the second 3 per cent, about the same. The mortality was found to be caused by meningitis in seven cases, pneumonia in one case, following spinal puncture in one case, septicemia one, petrositis and meningitis one and myelogenous leukemia one. Having found these statistics for Atlanta, I then converted them into death rates per hundred thousand of population for comparison with the United States Bureau of Vital Statistics, which figures are for the United States as a whole. They are 1.3, 1.2, 1.3, 1.6, 1.3 for the first group, which puts the assumed Southeast in a class of about average mortality, but in the first two years of the second group Atlanta's mortality was about twice as high as the average for the country as a whole. In 1939, however, for which I do not have a bureau figure, the mortality has dropped to less than one half. From these statistics it would seem that the geographic virulence of mastoiditis as regards the Southeast is slightly higher than an average for the United States as a whole.

DR. MERCER G. LYNCH, New Orleans: Throughout the country the anatomy of the mastoid doesn't vary. The methods of treatment of acutely and chronically inflamed ears do not vary to any great extent. Therefore, another problem enters into the question as to why there should be so much more mastoiditis in one part of the country as compared to another with regard to population, and because of this an attempt has been made to study the virulence of the organism with the idea in mind that, all factors being equal, it was the virulence of the organism that contributed to a great extent to the increase of mastoiditis throughout the country.

REHABILITATION FOLLOWING ACUTE CORONARY ARTERY OCCLUSION

ARTHUR M. MASTER, M.D.

AND

SIMON DACK, M.D.

NEW YORK

It is only during the past decade or two that the clinical recognition of coronary occlusion has become well established among general practitioners. There has therefore been a limited period for follow-up study of patients recovering from the acute attack, and of necessity relatively little accurate information is available concerning the future course of the disease. This is true particularly concerning the degree of economic restitution following an attack.

Since coronary occlusion is very common,¹ occurring in all strata of society, it is of importance from a therapeutic and prognostic standpoint for a physician to know whether the patient may return to work. Many questions concerning the effect of work following coronary occlusion have remained unanswered. For example, does work increase the susceptibility to further attacks of occlusion, to death, to heart failure, to angina pectoris? If angina pectoris is present, should the patient be permitted to work? Does the presence of a slight degree of heart failure preclude the possibility of working? There is wide variation of opinion concerning the answers to these questions. Formerly it was commonly believed that coronary occlusion always entailed complete and permanent disability, and even now millions of dollars are paid annually by insurance companies to men who have suffered a coronary occlusion, regardless of their present physical condition. However, a number of authors² including ourselves³ have recently pointed out not only that the immediate prognosis of coronary occlusion is steadily improving but that the patient may recover completely and remain in good health for many years. Furthermore, one of us showed that many patients recovering from the acute attack returned to work. The first complete report⁴ on this subject, comprising seventy-five cases followed in private practice, showed that at least 62 per cent of the patients returned to their usual routine of life or work and that 14 per cent resumed light to moderate activity. Only 8 per cent of the patients were completely disabled. Other authors⁵ have subscribed to our point of view.

From the Cardiographic Laboratory and the Medical Services of the Mount Sinai Hospital.

Read before the Section on Preventive and Industrial Medicine and Public Health at the Ninety-First Annual Session of the American Medical Association, New York, June 12, 1940.

1. Master, A. M.; Jaffe, H. L., and Dack, Simon: The Prevalence of Coronary Artery Occlusion, *New York State J. Med.* 39: 1937 (Oct. 15) 1939.

2. Conner, L. A., and Holt, Evelyn: The Subsequent Course and Prognosis in Coronary Thrombosis: An Analysis of 287 Cases, *Am. Heart J.* 5: 705 (Aug.) 1930. Coombs, C. F.: Prognosis in Coronary Thrombosis, *Bristol Med.-Chir. J.* 49: 277, 1932. Mullins, W. L.: Age Incidence and Mortality in Coronary Occlusion: A Review of Four Hundred Cases, *Pennsylvania M. J.* 39: 322 (Feb.) 1936. White, P. D.: Immediate and Ultimate Prognosis in Heart Disease, *J. A. M. A.* 112: 2380 (June 10) 1939. Willis, F. A.: Life Expectancy in Coronary Thrombosis, *ibid.* 106: 1890 (May 30) 1936.

3. Master, A. M.; Jaffe, H. L., and Dack, Simon: The Treatment and Immediate Prognosis of Coronary Artery Thrombosis (267 Attacks), *Am. Heart J.* 12: 549 (Nov.) 1936. Master.

4. Master, A. M.: Coronary Artery Thrombosis, with Treatment by Prolonged Rest in Bed and Low Calory Diet: Improved Prognosis, *J. A. M. A.* 105: 337 (Aug. 3) 1935.

5. Parkinson, J., and Bedford, D. E.: Cardiac Infarction and Coronary Thrombosis, *Lancet* 1: 4 (Jan. 7) 1928. Cooksey, W. R.: Coronary Thrombosis: Follow-Up Studies with Especial Reference to Prognosis, *J. A. M. A.* 104: 2063 (June 8) 1935. Lewis, W. H., Jr.: Coronary Occlusion: Report of Unusual Activities After Recovery, *ibid.* 114: 484 (Feb. 10) 1940. White.³

This follow-up study consists of a much larger series of cases. It concerns itself not only with the problem of how many return to work but also with factors which favor economic restitution.

MATERIAL

The series consists of 415 patients, 185 private and 230 hospital ward, who had sustained an acute coronary occlusion and had survived the acute attack⁶ (table 1). Detailed information concerning these patients' activities following the attack was obtained by the questionnaire reproduced here. Many of the private patients were also seen frequently at the office and practically all the ward patients were observed in a special follow-up clinic.

WORK QUESTIONNAIRE

Name: Age: Date of Attack:

1. What kind of work, if any, did you do before your illness?
2. Have you done any work since your illness?
3. If you have not worked is it because:
 - (a) you were advised not to (if so, by whom)?
 - (b) you are receiving sickness or disability insurance?
 - (c) you have been unable to find a job?
 - (d) you are unable to work?
 If you are unable to work, what is the reason?
4. If you have worked:
 - (a) How soon after you left the hospital did you return to work?
 - (b) What kind of work have you been doing?
 - (c) Are you able to work full time? Part time?
 - (d) If you are not able to work full time, what is the reason?
 - (e) Do you find it difficult to work? If so, why?
5. Have you any disability insurance from which you could receive benefits if you could not work?

There were 342 males and seventy-three females. Seventy-five per cent of the patients had suffered one attack, 22 per cent a second attack and the remainder a third or fourth attack when they first came under our observation. Two fifths of the patients were in the sixth

TABLE 1.—Summary of 415 Attacks

	Private	Ward	Total
Total cases.....	185	230	415
Sex: Male.....	146	196	342 (82%)
Female.....	39	34	73 (18%)
One attack.....	157	155	312 (75%)
Two attacks.....	26	64	90 (22%)
Three and four attacks.....	2	11	13 (3%)
Age groups:			
30-39.....	4	21	25 (6%)
40-49.....	48	58	106 (26%)
50-59.....	63	101	164 (40%)
60-69.....	50	43	93 (22%)
70-89.....	20	7	27 (6%)

TABLE 2.—Period of Follow-Up After Recovery from Attack

Period	Private	Ward	Total
6 months or less.....	14	28	42 (10%)
6 to 12 months.....	41	26	67 (16%)
1½ years.....	9	16	25 (6%)
2 years.....	19	52	71 (17%)
3 years.....	25	52	78 (19%)
4 years.....	20	52	72 (17%)
5 years.....	22	18	40 (10%)
6 years.....	10	6	16 (4%)
7 years.....	9	0	9 (2%)
8 to 15 years.....	9	0	9 (2%)
Unknown.....	6	0	6 (1%)
	185	230	415

decade of life and the majority of the remainder were in the fifth and seventh decades.

The longest period of observation was fifteen years and the average about three years (table 2). Eighty patients were followed five years or more.

6. Of 857 patients with acute coronary occlusion observed during the past ten years, 662 survived the acute attack. Of these, 247 were lost from observation or had sustained their attack too recently to be available for study, leaving a total of 415 cases, which form the basis for this report.

All types of occupation and all strata of society were represented (table 6). It will be noted that more than 50 per cent of the ward patients were manual workers or laborers, while these occupations composed only 11 per cent of the private group.

TABLE 3.—Effect of Age

Age Groups	No. of Cases	Return to Work		
		Full	Part	Total
30-39.....	25	14	5	19 (76%)
40-49.....	106	40	23	63 (59%)
50-59.....	164	50	37	87 (53%)
60-69.....	94	22	18	40 (42%)
70-89.....	27	6	6	12 (44%)
Total.....	415	132 (32%)	89 (21%)	221 (53%)

TABLE 4.—Influence of Sex and Social Status

Sex	No. of Cases	Return to Work		
		Full	Part	Total
Private				
Male.....	146	71	17	88 (60%)
Female.....	39	7	11	18 (46%)
Total.....	185	78	28	106 (57%)
Ward				
Male.....	196	51	45	96 (49%)
Female.....	34	3	16	19 (56%)
Total.....	230	54	61	115 (50%)
Total				
Male.....	342	122	62	184 (54%)
Female.....	73	10	27	37 (51%)
Total.....	415	132	89	221 (53%)

The following points were considered: the percentage of patients returning to work; whether the patient experienced any symptoms of impaired cardiac reserve during work; the influence of age, sex, number of attacks sustained and occupation on the incidence of return to work; the time of return to work; the reasons for not resuming work; the incidence of further attacks of occlusion, and the mortality rates of those who returned to work as compared with those who did not.

RESULTS

Fifty-three per cent of all patients returned to work following recovery from the attack; these included 57 per cent of private patients and 50 per cent of ward patients. In 32 per cent the work was full time and in 21 per cent part time (table 3). In general, the private patients fared better than the ward, the degree of economic restitution being greater in the former group (table 4). Thus 42 per cent of private patients resumed full time work, whereas only 23 per cent of the ward patients did so.

The factor of greatest importance in determining return to work was the age of the patient (table 3). The younger the patient the more probable is his return to work. Thus 75 per cent of those in the fourth decade and only 43 per cent of those in the seventh resumed their occupation. This is not surprising, since even in the general population the incidence of those in gainful employment probably decreases with age.

Sex was no factor in influencing return to work (table 4), for almost as many women (51 per cent) resumed their former activities as did men (54 per cent).

The second most important factor was the number of attacks of occlusion sustained by the patient (table 5). It is well known² that the immediate prognosis, including the mortality rate, of an initial attack is better than

that of a second or third attack. Similarly the percentage of patients returning to work after a first attack exceeded by far that of patients who had sustained a second or third attack, the percentages being 59, 38 and 23 respectively. It is noteworthy that one man resumed his occupation after a fourth attack.

TABLE 5.—*Influence of Successive Attacks*

Attack	No. of Cases	Return to Work		
		Full	Part	Total
1.....	312	113	71	184 (59%)
2.....	90	17	17	34 (38%)
3 and 4.....	13	2	1	3 (23%)
Total.....	415	132	89	221 (53%)

Previous occupation played some role in determining return to work (table 6). Thus 84 per cent of professional persons, particularly physicians, and 67 per cent of white collar and office workers resumed their occupation, whereas only from 50 to 55 per cent of the remaining groups did so. Only occasionally did a patient take up a more sedentary occupation but not infrequently he did only light work. This was true chiefly among manual workers and laborers; more than half of those who resumed work did so on only part time, whereas almost all the professional persons and office workers worked full time. However, this discrepancy may be explained in part by the fact that the professional and executive classes are able to lighten their activities although they seem full time and are so described.

TABLE 6.—*Influence of Occupation*

Occupation	No. of Cases	Return to Work		
		Full	Part	Total
Private				
1. Workers and laborers.....	20	8	3	11
2. Store workers.....	11	5	2	7
3. White collar and office workers.....	18	11	2	13
4. Business men.....	26	14	2	16
5. Professional persons.....	38	28	7	35
6. Housewives.....	31	6	10	16
7. None or retired.....	11	0	0	0
8. Unknown.....	30	6	2	8
Total.....	185	78	28	106 (57%)
Ward				
1. Workers and laborers.....	123	28	36	64
2. Store workers.....	13	2	3	5
3. White collar and office workers.....	33	14	6	20
4. Business men.....	9	3	0	3
5. Professional persons.....	11	4	2	6
6. Housewives.....	32	3	14	17
7. None or retired.....	9	0	0	0
Total.....	230	54	61	115 (50%)
Total				
1. Workers and laborers.....	143	36	39	75 (53%)
2. Store workers.....	24	7	5	12 (50%)
3. White collar and office workers.....	51	25	8	33 (67%)
4. Business men.....	35	17	2	19 (55%)
5. Professional persons.....	49	32	9	41 (84%)
6. Housewives.....	63	9	24	33 (52%)
7. None or retired.....	20	0	0	0
8. Unknown.....	30	6	2	8 (26%)
Total.....	415	132	89	221 (53%)

It will be seen in table 6 that twenty patients had no occupation or were retired prior to the attack. Although we have included all these patients in the group that did not return to work, it should be noted that only a few were invalids or bedridden. The majority were able to carry on the ordinary activities of daily life.

In table 7 we have tabulated the time of return to work following discharge from the hospital or after getting out of bed (usually a four to eight week period).

Of the 169 patients for whom this could be determined, 92 per cent resumed work within one year, 76.5 per cent within six months and 54 per cent within three months of discharge. Ten patients continued working through the entire attack, the diagnosis of coronary occlusion being made later on the basis of history and changes in the electrocardiogram.

Although the majority of patients resumed work, almost half of these experienced some degree of pain, dyspnea or weakness during work (table 8). Ward patients predominated among these, particularly housewives, laborers and white collar workers. However, the symptoms were not severe enough to keep them from their ordinary activities. It should be remembered that in 50 per cent or more of these cases similar symptoms were probably present prior to the attack of coronary occlusion.

Inability or failure to return to work (table 9) was usually due to physical disability, the particular complaints being angina pectoris, weakness or dyspnea. Heart failure was also common. A large group of patients did not work because they were advised against it by their physicians. It seemed to us that a large percentage of this group could have worked if it had been necessary. Many patients held disability insur-

TABLE 7.—*Time of Return to Work After Attack*

	Private	Ward	Total
Never stopped.....	10	0	10 (6%)
3 months or less.....	41	40	81 (48%)
3-6 months.....	20	18	38 (22.5%)
6-12 months.....	7	19	26 (15.5%)
1-2 years.....	1	9	10 (6%)
2-3 years.....	0	2	2 (1%)
4 years.....	0	1	1 (0.5%)
6 years.....	1	0	1 (0.5%)
Total.....	80	89	169
Unknown.....	26	26	52
	106	115	221

ance, particularly in the private group. Twenty-eight of the latter and two ward patients gave this as the sole reason for not returning to work. Not a few patients felt well enough to resume their occupations despite the disability insurance they held. Several patients did not work because it was no longer necessary for them to do so or because of inability to find a job.

An attempt was made to determine the influence of return to work following coronary occlusion in predisposition to a further attack or to congestive failure by comparing the incidence of these in the group that worked and in the one that did not (table 10). One difficulty in doing this is the fact that the nonworkers included a large number of very sick patients. Nevertheless it is evident that the number of subsequent attacks was no greater in the working group than in the nonworking group. This is true also of the number of patients who developed congestive heart failure or who died subsequent to the acute attack. It appears, therefore, that return to work following recovery from the attack did not adversely influence the occurrence of further attacks of coronary occlusion or of heart failure.

COMMENT

Not only has there been improvement in the immediate prognosis of the acute attack of coronary occlusion² but our present observations indicate also quite definitely that the outlook for the future is hopeful for the patient who survives the attack. We have found

that approximately half the number of patients are able to resume their former occupations within one year, and usually in less than six months. To be sure, many of those who return to work complain of angina, dyspnea or weakness, but these symptoms are usually mild and frequently no more severe than they were prior to the attack.

We have observed many of these patients at regular intervals and have gained the distinct impression that, as a rule, their symptoms were not directly connected with the fact that they were employed but would have been present in any case. Only occasionally has it been our experience that symptoms would develop while a patient was employed which would disappear when he gave up his job. Usually the symptoms persisted. It would seem that, following coronary occlusion, patients may be placed in two general groups. One includes those who recover quite well and can resume their usual mode of life although they may have some complaints. The great majority of this group are patients below the age of 50 who have sustained only one attack of coronary occlusion. In the other group are those who never completely recover from the occlusion but are left with a persistent anginal syndrome or evidence of heart failure. The latter patients are unable to return to work whereas the former are not only able to do so but are usually

is satisfactory. In such an occupation one faces the problem of compensability if another occlusion occurs or heart failure sets in, but we have already indicated our belief that these occur irrespective of occupation.

The indications of disability following coronary occlusion are similar to those in any case of coronary

TABLE 9.—Reasons for Failure to Work

	Private	Ward	Total
Unable.....	26	68	92 *
Advised not to.....	16	56	72
Disability insurance.....	28	2	30
Not necessary to work.....	1	0	0
No job.....	1	5	6
Too recent.....	1	3	4
Unknown.....	3	1	4
Total.....	79	115	194

* Twenty of these patients were unable to work prior to the attack.

artery disease. These are chiefly the presence of heart failure or a severe anginal syndrome, particularly at rest or during habitual activity. Occasionally extreme weakness may be persistent as the only symptom of disability. A history of recurrent occlusion, especially in association with aneurysm of the heart, is a legitimate reason for disability, although even such patients sometimes carry on comfortably. The same is true of patients whose blood pressure is very much elevated. Even in the presence of these indications of disability it may yet be advantageous to permit some degree of activity, since it may be tolerated without adverse effect and may benefit the patient psychologically. Invalidism has too long been emphasized in heart disease, and a hopeful outlook on the part of the physician may guide the patient into a useful and enjoyable life.

SUMMARY AND CONCLUSIONS

A follow-up study after coronary occlusion was made to determine the incidence and degree of economic restitution and the various factors influencing the latter.

Four hundred and fifteen patients were followed for from six months to fifteen years after the attack. There were 185 private and 230 ward patients of all ages, occupations and walks of life.

More than half the patients returned to work on full or part time. Half of this group resumed work within three months of discharge, three fourths within six months and nine tenths within one year.

The percentage of patients returning to work was higher in the younger age groups, particularly those

TABLE 10.—Relation of Work to Further Attacks

	Patients Who Worked			Patients Who Did Not Work		
	Private	Ward	Total	Private	Ward	Total
Number.....	106	115	221	79	115	194
Subsequent coronary occlusion.....	16	9	25	15	22	40
Subsequent death.....	18	6	24	24	20	44
Subsequent heart failure.....	..	9	9	..	22	22

under 40, and in those recovering from an initial attack. The percentage was about the same in males and females.

The professional and white collar classes resumed their work more frequently than did persons engaged in other occupations.

The chief cause of failure to return to work was physical disability resulting from angina pectoris, dyspnea or weakness. Other reasons were advice not to work and disability insurance.

TABLE 8.—Symptoms on Return to Work

Occupation	Working	Symptoms *
1. Workers and laborers.....	75	48
2. Store workers.....	12	4
3. White collar and office workers.....	33	16
4. Business men.....	19	6
5. Professional men.....	41	6
6. Housewives.....	33	23
7. None or retired.....	0	0
8. Unknown.....	8	1
Total.....	221	104 (47%)

* Angina pectoris, dyspnea, weakness.

unaffected by the effort, even though it is frequently no less arduous than that sustained prior to the attack.

It is our opinion also that return to work is not a factor in the occurrence of further attacks of coronary occlusion. We have already presented evidence⁷ in 1,500 attacks of coronary occlusion that the onset is not related to any external factor or to any particular occupation or social class. Coronary occlusion is the end result of a progressive atherosclerotic process and occurs as often in the sedentary individual as in one engaged in active work. In the present series the incidence of further attacks of coronary occlusion or heart failure in those who return to work was not unduly large and was not greater than in those who remained invalids or led a sedentary life. Similarly the number of deaths was not higher.

It is obvious from our observations that sustaining an occlusion of a coronary artery is in itself no reason for permanent disability. Indeed, frequently the temporary disability does not extend beyond from three to six months, and the patient can return to his previous occupation. If the work is strenuous, such as manual labor or factory work, a thorough examination before return to it and periodically thereafter is essential in order to be certain that the condition of the heart

7. Master, A. M.; Dack, Simon, and Jaffe, H. L.: The Relation of Various Factors to the Onset of Coronary Artery Thrombosis, *J. Mount Sinai Hosp.* 3: 224 (Jan.-Feb.) 1937; Factors and Events Associated with the Onset of Coronary Artery Thrombosis, *J. A. M. A.* 109: 546 (Aug. 21) 1937; The Precipitating Factors of Coronary Artery Occlusion, *Indust. Med.* 8: 327 (Aug.) 1939; Activities Associated with the Onset of Acute Coronary Artery Occlusion, *Am. Heart J.* 18: 434 (Oct.) 1939.

About half the patients who returned to work complained of pain, dyspnea or weakness which were not of sufficient degree to cause disability. It is our impression that the work did not aggravate these symptoms or predispose the patient to them or to further attacks of coronary occlusion or heart failure.

An attack of acute coronary occlusion in itself is not sufficient reason for permanent disability. Complete recovery and full or partial economic restitution are common. Heart failure or a severe anginal syndrome is evidence of complete disability.

125 East Seventy-Second Street.

ABSTRACT OF DISCUSSION

DR. HARRY E. UNGERLEIDER, New York: Our increased knowledge of heart disease in recent years has brought a more encouraging outlook. It is a far cry from individual case reports of recovery from coronary occlusion which were cited in the literature a decade ago to the hopeful prognosis for the majority revealed by the authors' study. While a relatively optimistic view toward coronary occlusion now prevails among cardiologists there continues to be an unwarranted dread of this disease. The feeling is widespread among the laity and also with the medical profession that an individual who has sustained an attack of coronary thrombosis is "through" and is doomed to spend his remaining days in complete invalidism. Studies such as the present one should dispel this erroneous concept, which has caused needless fear and unhappiness to thousands of individuals with this common disease. Apart from this problem as it applies to the management of individual cases there are two important aspects, the relation of coronary disease to industry as regards industrial law and the subject of disability insurance. There is a deplorable lack of uniformity in different states in the legal attitude toward the responsibility of industry to employees with heart disease regarding both employability and compensation. There is a reluctance on the part of industry to accept for employment individuals known to have heart disease because of possible liability for subsequent illness. In fairness to both parties, it would be advisable to have subjects with heart disease sign waivers removing liability for further complications. It is hoped that this important subject, which has been largely neglected by the medical profession, will receive the consideration it richly deserves and will result in some uniformity of procedure which is now woefully lacking. The subject of disability insurance is of great practical importance. Coronary thrombosis is no longer regarded in itself as cause for total and permanent disability unless there is some residual impairment of cardiac function such as angina or evidence of heart failure. Insurance companies for years have carried out a rehabilitation program in cases of coronary thrombosis. Following a temporary period of total disability after the attack a cooperative attempt is made to restore the subject to his previous occupation or another less strenuous, and disability payments are continued until it is definitely ascertained whether work can be continued. This program has proved most satisfactory to both the insured party and the company, and in a large number of cases the psychologic effects of invalidism, often worse than the disease itself, have been successfully averted. It should be a primary objective in the treatment of coronary thrombosis to make definite efforts to avoid invalidisms instead of instilling needless fear and restrictions, as has been our practice too often in the past.

DR. CARY EGGLESTON, New York: I think we have been too long afraid to permit our patients, after a coronary occlusion, to attempt rehabilitation. We have been misled partly by our own fear but chiefly by the patient's fear, which has been instilled in many by physicians who have had too little experience with the ultimate outcome in these cases. We ought to about face in our treatment of these patients and make it the primary goal to tide them through the attack with an eye to their rehabilitation. A great deal of the disability residual in some of these patients who do not work is purely a psychic disability. Where conditions in such patients alter from circumstances without, over which they have no control, a number of

these patients who previously were unable or believed themselves unable to work have successfully resumed occupation on a satisfactory or economic level. We must lay greater emphasis on rehabilitation. As a profession we owe a duty to ourselves to educate our brothers in the recoverability from coronary occlusion.

DR. CLIFFORD KUH, New Haven, Conn.: Yesterday at the General Scientific Meeting in discussing the management of patients with heart failure Dr. Samuel A. Levine mentioned that sometimes we are a little fearful in treating them. In one case of coronary thrombosis when other measures failed he got the man well by getting him out of bed and into a chair. I think the point is a significant one to bring out here, namely that we might be fearful not only in our after-care but in our therapeutics. In this case the man had congestive failure with hydrothorax. By getting him in a chair the edema was thrown to the extremities. This relieved respiration and the man did very well.

OCCIDENTAL BERIBERI WITH CARDIOVASCULAR MANIFESTATIONS

ITS RELATION TO THIAMIN DEFICIENCY

SOMA WEISS, M.D.

BOSTON

In 1936 we¹ described the existence of "wet" beriberi with cardiovascular disturbances as a nutritional disease of regular occurrence in Boston and its vicinity. We presented evidence indicating that this disease is related to vitamin B deficiency and that administration of thiamin chloride or vitamin B concentrate benefits patients with this condition. Since this first report, further studies have been conducted on the clinical, physiologic and chemical characteristics of beriberi and on its treatment.² We have induced cardiac disturbances in animals fed on a thiamin-deficient diet and demonstrated that their cardiac disturbances disappeared promptly following the administration of thiamin chloride.³ We have investigated the metabolism of the myocardium in vitamin B₁ deficiency⁴ and made a systematic search to evaluate the role of certain intermediary metabolic products, such as lactic acid, pyruvic acid, methyl glyoxal, glyceraldehyde and adenylic acid, in the induction of cardiac disturbances.⁵ In the light of these and more recent observations, as well as of reports of other investigators, it may be of interest to summarize the present status of our knowledge of "Occidental beriberi" with cardiovascular manifestations.

Read in part before the Eighth American Scientific Congress, Washington, D. C., May 13, 1940.

From the Medical Clinic of the Peter Bent Brigham Hospital, the Boston City Hospital and the Department of Medicine, Harvard Medical School.

Since this article was written, the term "thiamine hydrochloride" has been adopted as the Pharmacopoeial name for the substance referred to here as thiamin chloride.

1. Weiss, Soma, and Wilkins, R. W.: The Nature of the Cardiovascular Disturbances in Vitamin Deficiency States, *Tr. A. Am. Physicians* 51: 341, 1936.

2. Taylor, F. H. L.; Weiss, Soma, and Wilkins, R. W.: The Bisulfite Binding Power of the Blood in Health and in Disease, with Special Reference to Vitamin B₁ Deficiency, *J. Clin. Investigation* 10: 833 (Nov.) 1937. Wilkins, R. W.; Weiss, Soma, and Taylor, F. H. L.: Relationship of Pyruvic Acid to the Bisulfite Binding Substances of the Blood, *Proc. Soc. Exper. Biol. & Med.* 38: 296 (March) 1938; The Effect and Rate of Removal of Pyruvic Acid Administered to Normal Persons and to Patients With and Without "Vitamin B Deficiency," *Ann. Int. Med.* 12: 938 (Jan.) 1939. Weiss and Wilkins.¹²

3. Weiss, Soma; Haynes, F. W., and Zoll, P. M.: Electrocardiographic Manifestations and the Cardiac Effect of Drugs in Vitamin B₁ Deficiency in Rats, *Am. Heart J.* 15: 206 (Feb.) 1938.

4. Muus, Jytte; Weiss, Soma, and Hastings, A. B.: Tissue Metabolism in Vitamin Deficiencies: II. Effect of Thiamine Deficiency, *J. Biol. Chem.* 129: 303 (July) 1939.

5. Haynes, F. W., and Weiss, Soma: Responses of the Normal Heart and the Heart in Experimental Vitamin B₁ Deficiency to Metabolites (Pyruvic Acid, Lactic Acid, Methyl Glyoxal, Glyceraldehyde and Adenylic Acid) and to Thiamin, *Am. Heart J.* 20: 34 (July) 1940.

EVIDENCE FOR THE EXISTENCE OF BERIBERI
IN THE UNITED STATES

In the Orient, beriberi is at times a disease of common occurrence and of serious consequence. It may appear as (1) neuritic or "dry" beriberi with symptoms and signs related to the nervous system; (2) the edematous or "wet" type in which the clinical picture consists mainly of diffuse dependent and nondependent edema, quite similar in distribution to that seen in glomerulonephritis, toxemia of pregnancy and nephrosis, with the serous cavities, including the pericardium, often containing varying amounts of fluid; (3) the cardiac type, which in its pronounced form may be associated with high venous pressure and dilatation of the heart. The clinical reports from the Orient emphasize the fact that "mixed types," i. e. combinations of the various manifestations of beriberi, are common.

It is essential to appreciate the fact that in many of the older clinical reports of cases of beriberi the cardiac size was determined only with the aid of percussion and hence is unreliable. Aalsmeer and Wenckebach,⁶ on the basis of their studies of beriberi in Java, state that dilatation and failure of the right ventricle characterize this type of heart disease and that the circulatory failure is "right sided failure." Wenckebach⁷ postulated that the blood flow is relatively rapid in beriberi with heart disease and observed that the symptoms and signs of circulatory failure in beriberi become accentuated after the administration of epinephrine and improved after pitressin. On postmortem examination he observed edema and "hydropic" degeneration of the myocardium.

In the United States, chiefly in the publications of Shattuck,⁸ Wechsler⁹ and Minot, Strauss and Cobb,¹⁰ it has been suggested that in the etiology of certain types of polyneuritis, including alcoholic polyneuritis, nutritional deficiency and lack of vitamin B₁ play a role. Our establishment subsequently of the occurrence of "wet" beriberi in the same nutritional disorders added evidence to support the claim that these polyneuritides are of the same etiology as the polyneuritis of "dry" beriberi in the Orient.

In our earlier studies we compared the clinical, physiologic and morphologic characteristics of the disease with those observed in the Orient. Both the clinical studies¹¹ and subsequent experiences revealed that the same types of beriberi described in the Orient exist in this country. Thus we have reported cases presenting severe polyneuritis and electrocardiographic changes, tachycardia and a normal size heart; polyneuritis and severe congestive failure of the heart associated with electrocardiographic changes but with a normal size heart; and a severe degree of dilatation of the heart with little or no electrocardiographic changes, associated with a moderate or severe degree of edema. We found that the type of circulatory failure in "wet" beriberi might be either right or left sided or both. In addition to the clinical picture of right ventricular failure described by Aalsmeer and Wenckebach, orthopnea, cardiac asthma, x-ray and clinical signs of pulmonary

congestion and edema were also observed. The onset of symptoms might be either gradual or quite sudden. Breathlessness, palpitation and tachycardia, gallop rhythm, murmurs and venous congestion, prone to become accentuated on exertion, were present even at rest in the advanced cases, and in these severe cases bounding pulsation of the arteries with "pistol sounds" developed. In some patients bed rest alone resulted in improvement, but in others unexpected accentuation of the circulatory failure and collapse developed at rest, resulting in unexpected death. A strong tendency to circulatory collapse and shock was noted particularly in the presence of respiratory infections. The relative prominence of cardiac or peripheral vascular dysfunction varied considerably. Severe polyneuritis was usually associated only with a mild degree of congestive failure of the circulation, because the presence of such polyneuritis interfered with locomotion and work and hence protected the heart.

The presence of edema, varying in degree from slight to severe, was independent of, though at times influenced by, the protein content of the blood. The edema, while dependent in some instances, was usually diffuse and interstitial. Thus loss of from 40 to 50 pounds (18 to 23 Kg.) of fluid occurred in persons who at first appeared robust and at the time of admission only slightly edematous. As in glomerulonephritis or in toxemia of pregnancy, the protein content of the edema fluid was unusually low. During the edematous stage, oliguria with highly concentrated urine, and at times slightly elevated nonprotein nitrogen of the blood, was present and administration of fluid had little effect on the concentration of urine. Following treatment a continuous maximal diuresis with low specific gravity developed.

The importance of thiamin deficiency in organic heart disease cannot be determined at present, mainly because of the lack of a reliable chemical method for measuring minute amounts of thiamin. As anorexia and unbalanced diet frequently exist in cases of organic heart disease, thiamin deficiency may well accentuate heart failure. We have encountered such cases.¹²

Physiologic studies have indicated that in patients with "wet" beriberi, particularly those with high venous pressures and edema, the arterioles are dilated, the utilization of oxygen in the venous blood is small and the velocity of blood flow is absolutely or relatively rapid. The vital capacity of the lungs is often severely reduced. In some instances, administration of epinephrine temporarily aggravated the condition, while pitressin exerted temporary improvement. In several respects the character of the heart and circulation in "wet" beriberi is similar to that in arteriovenous aneurysm and thyrotoxicosis.

The electrocardiograms often revealed changes, the most common finding being depression and inversion in the T waves and prolongation of the electric systole. At times low voltage of the electrical complexes, premature auricular and ventricular beats and auricular tachycardia developed.

The dietary histories of the patients were usually grossly unbalanced. In the alcoholic group, which in this part of the country represents the majority of cases, the caloric intake was usually high, but the vitamins, especially the B complex, were inadequate. Because beriberi does not develop in all patients consuming the same deficient diet, it is probable that in addition to

6. Aalsmeer, W. C., and Wenckebach, K. F.: Herz und Kreislauf bei der Beriberi-Krankheit, Wien. Arch. f. inn. Med. 16:193 (Jan.) 1929.
7. Wenckebach, K. F.: Das Beriberi-Herz, Berlin, Julius Springer, 1934.

8. Shattuck, G. C.: The Relation of Beriberi to Polyneuritis from Other Causes, Am. J. Trop. Med. 8:539 (Nov.) 1928.

9. Wechsler, I. S.: Unrecognized Cases of Deficiency Polyneuritis (Avitaminosis?), M. J. & Rec. 131:441 (May 7) 1930; Etiology of Polyneuritis, Arch. Neurol. & Psychiat. 29:813 (April) 1935.

10. Minot, G. R.; Strauss, M. B., and Cobb, Stanley: "Alcoholic" Polyneuritis: Dietary Deficiency as a Factor in Its Production, New England J. Med. 208:1244 (June 15) 1933.

11. Weiss and Wilkins (footnotes 1 and 12).

12. Weiss, Soma, and Wilkins, R. W.: The Nature of the Cardiovascular Disturbances in Nutritional Deficiency States (Beriberi), Ann. Int. Med. 11:104 (July) 1937.

the diet certain intrinsic bodily factors are involved. At times poor utilization of food substances played a role in the etiology. In addition to chronic alcoholism, peptic ulcer, chronic diarrhea, surgical resection of the intestine, diabetes, pregnancy, thyrotoxicosis, infectious diseases and psychotic aberration ("food cranks") are prone to predispose to the disease.

The acute form of "wet" beriberi is often precipitated by an increase in the requirement associated with a decreased intake of the vitamin B complex, and thiamin in particular. The vitamin requirement is increased in conditions associated with a high metabolic rate, such as fever, thyrotoxicosis, exercise and a high caloric intake of food. For this reason, after the onset of infectious diseases (pneumonia, malaria typhus, typhoid), persons with faulty nutrition and low vitamin B₁ intake but without symptoms ("presymptomatic" or "subclinical" deficiency) are prone to have fulminating beriberi develop following severe exertion. It is probable that the high mortality rate of alcoholic patients suffering from pneumonia depends in part on nutritional deficiencies.

Since the combination of high caloric and low thiamin intake particularly predisposes to the disease, patients with beriberi are often well nourished, as in the case of the polished rice eaters in the Orient or the alcohol consumers of the Occident. Because man seldom chooses or utilizes his food so that it is deficient in only one factor, patients in addition to manifestations of beriberi not infrequently had symptoms and signs of pellagra and less frequently of scurvy, riboflavin and vitamin A deficiencies. No explanation has been found for the predisposition of patients, apparently on the same deficient diet, to "dry" beriberi in one group and to "wet" beriberi in another.

THE ROLE OF ALCOHOL

Alcohol per se is not considered a primary cause of the cardiovascular manifestations for the following reasons: (a) Chronic alcoholism is a common occurrence, while beriberi is relatively rare. (b) Pharmacologic studies fail to indicate that pure alcohol, without thiamin deficiency, causes cardiovascular damage or polyneuritis. (c) Administration of alcohol and thiamin chloride or vitamin B concentrate improves the clinical manifestations. (d) Chronic alcoholism is apt to be associated with manifestations of other vitamin deficiencies, such as night blindness, scurvy and pellagra.

It is possible, however, as we have pointed out,¹² that alcohol and other nutritional factors play a secondary predisposing role just as a pure carbohydrate diet predisposes to beriberi. Thus Abderhalden and Wertheimer¹³ have demonstrated that, if vitamin B deficient pigeons are fed fatty acids instead of carbohydrates, muscular cramps characteristic of the deficiency do not develop.

The majority of cases of "alcoholic beriberi" occurred among drinkers of whisky and gin, but in a few the condition developed as a result of excessive drinking of beer. The vitamin B content of American beer is low.¹⁴ No instances of beriberi were observed among wine drinkers.

Usually the postmortem studies revealed a moderately or severely dilated heart without coronary or endocardial disease, but in some cases of fatal circulatory

collapse the cardiac dilatation was lacking. In other instances, as reported in 1936, there was myocardial hypertrophy and increase in the weight of the heart. Similarly the microscopic examination revealed varied conditions. In several instances no microscopic changes were present. In others "interstitial edema" or, rather, collagen and "hydropic" degeneration, as described by Wenckebach, was noted. Since these changes were observed by us also in other types of heart disease, they are not to be considered as specific of "beriberi heart." The water content of the myocardium was normal regardless of the presence or absence of myocardial "edema,"¹ suggesting that the intercellular material contained a considerable amount of solids.

DIFFERENTIAL DIAGNOSIS

The individual clinical characteristics of the cardiovascular changes in beriberi, as in other cardiovascular diseases, are not specific. Nevertheless the combination of the clinical manifestations, lack of etiology of other types of heart disease and history of unbalanced diet permit a diagnosis with a fair degree of probability. The combined presence of congestive failure of the circulation and a relatively or absolutely increased rate of the circulation rules out several other types of heart failure. The simultaneous presence of other manifestations of nutritional deficiency disease, particularly polyneuritis, gastrointestinal disturbances, pellagroid cutaneous lesions and a tendency to psychosis make the diagnosis probable. Polyneuritis, often only in a mild form, is usually present in "wet" beriberi. The polyneuritic type of beriberi, however, frequently exists without cardiovascular manifestations. It should be remembered, however, that not every obscure myocardial failure without valvular disease is a "beriberi heart." During the past four years, while attempting to select beriberi with cardiac disease, we have been impressed by the relative frequency of other types of heart disease which, like "beriberi heart," are not as yet commonly recognized by physicians. "Beriberi heart" should be differentiated from diseases of the heart associated with arteriovenous aneurysms, thoracic and spinal deformities, rare cases of cirrhosis of the liver, amyloidosis and xanthomatosis, glycogen disease (Van Gierke), pituitary and ovarian disease, glomerulonephritis, idiopathic postpartum myocardial failure, lupus erythematosus disseminatus, scleroderma heart, Boeck's sarcoid, periarteritis nodosa, thrombo-angiitis obliterans, certain respiratory infections, trichinosis, progressive muscular dystrophy and Friedreich's ataxia. The specific characteristics of these and other myocardial diseases not usually recognized have been discussed elsewhere.¹⁵

The frequency of "beriberi heart" varies considerably, depending on the economic and social level of the population. We have observed more than fifty cases and have collected from hospital records an additional group. In a large charity hospital we noted its occurrence as frequently as once in every 160 medical admissions, but in many of these cases the condition was mild. It is probable that partial deficiencies of thiamin, as determined chemically, will be found to be a relatively frequent nutritional state in this country.

TREATMENT

The response of patients with "wet" beriberi varied considerably. As a rule, patients with "dry" beriberi,

13. Abderhalden, Emil, and Wertheimer, Ernest: Beziehungen des Vitamin B-Komplexes (insbesondere des Vitamins B₁) zum Kohlehydrathaushalt, Arch. f. d. ges. Physiol. 233: 395, 1933.

14. Donovan, P. B., and Hanke, M. E.: The Vitamin-B and -G Content of Commercial Beer, Proc. Soc. Exper. Biol. & Med. 33: 538 (Jan.) 1936.

15. Weiss, Soma: Diseases of the Heart and the Aorta Which Are Not Well Recognized, M. Clin. North America 23: 1323 (Sept.) 1939.

cardiac symptoms and electrocardiographic changes improved slowly over a period of weeks with any type of treatment, while patients with massive edema, dilated heart, high venous pressure and enlarged liver usually responded rapidly, particularly if these conditions had existed but a few weeks. Some of the patients improved following rest alone, others after rest, digitalis and mercurial diuretics. But the maximal and most regular benefit was assured by bed rest and massive subcutaneous doses of thiamin up to 20 or 30 mg. three times a day. The size of these doses was determined empirically, and future studies on the fate, storage and elimination of thiamin must determine the rational dosage. Thiamin and vitamin concentrates are effective orally, but because patients with beriberi often suffer from gastrointestinal and liver disorders which may well interfere with the utilization of thiamin it is advisable to use thiamin chloride parenterally in the severe cases. The duration of the condition and the response of the tissues to the deficiency are probably the major factors determining the time of onset of clinical response, which may vary from several days to several weeks following the institution of therapeutic measures. The fact that the myocardium can develop hypertrophy, "hydropic" degeneration and deposition of interstitial collagen indicates that prolonged thiamin deficiency, like other vitamin deficiencies, can change from an easily reversible to an irreversible condition. Rapid improvement is usually associated with diuresis, temporary bradycardia and transient elevation of the arterial pressure. At times the changes in the electrocardiogram may become temporarily accentuated. Diuresis, less dyspnea and contraction of the peripheral arteriolar system were the early manifestations of improvement. Reduction of the size of the heart and disappearance of the alterations in the electrocardiograms occurred days or weeks later.

In some patients the clinical picture of deficiency and the electrocardiographic changes became accentuated for a day or two after the administration of thiamin, following which general improvement occurred. A similar reaction in animals to experimental thiamin deficiency was observed.

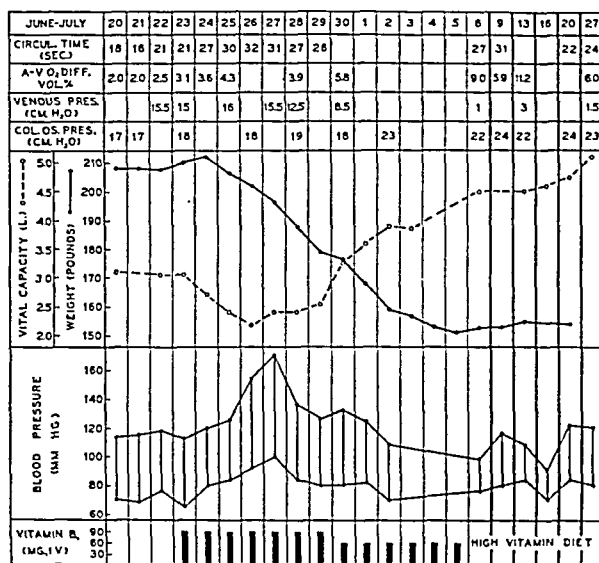
Although we have made no special study of the effect of thiamin chloride on polyneuritis, we have had abundant opportunity to compare clinically the effect of thiamin chloride on the nervous and cardiovascular systems. In our experience the effect of thiamin chloride on the cardiovascular system was more pronounced and more rapid. Indeed, the improvement of polyneuritis of severe type was slow and could not be attributed to thiamin chloride alone. There were, however, a few instances of polyneuritis with paresthesias which, after an adequate control period, responded within a few days to thiamin chloride.

Our observations revealed that thiamin chloride is without effect in cardiovascular disturbances other than those of specific deficiency origin. Similarly, only edema of thiamin deficiency disappears after administration of this substance. Toxic side reactions to the thiamin chloride have not been noted even after intravenous administration in doses up to 75 mg. Because patients with beriberi often have other types of deficiencies, attention should be paid to the simultaneous treatment of pellagra with nicotinic acid and other vitamin B complexes, anemia with iron or liver extract and hemorrhagic tendencies with ascorbic acid or vitamin K.

REPORT OF CASES

Since our last report we have observed a number of additional patients suffering from beriberi with polyneuritis and cardiovascular manifestations. The following three cases are summarized here because they represent different forms of the disease:

CASE 1.—A. D., a white man aged 46, admitted on June 19, 1937, to the Boston City Hospital with swelling of the legs and arms of from two to three weeks' duration, had been a chronic consumer of beer and whisky. Analysis of his diet revealed gross deficiency in vitamins, particularly the vitamin B complex. About three weeks prior to admission his body began to swell and there was slight dyspnea on exertion. About thirteen months earlier the patient had had a similar though milder episode of generalized swelling with dyspnea. There was no history of rheumatic fever, syphilis, hypertension or any other organic heart disease. The rest of his history was irrelevant. On examination he was somewhat disoriented as to time and space. He appeared well developed and well nourished. General anasarca was present involving the face. The fundi of the eyes were normal. The left border of the heart



The response of the cardiovascular system to thiamin chloride in case 1.

was 11 cm. from the sternum in the fifth costal interspace. The heart was regular and rapid. The arteries were soft and the arterial pressure was normal or slightly low. Moist rales were present over the bases of the heart. No abdominal organs were palpated. The scrotum was markedly edematous. The patellar and ankle reflexes were diminished, but the superficial sensation was normal. Until the institution of thiamin therapy the specific gravity of the urine was between 1.026 and 1.030 and the urine contained traces of sugar. The hemoglobin concentration was between 74 and 80 per cent with the red cell count from 3.2 to 4.5 million per cubic millimeter. The white blood cell count was between 5,000 and 7,000. Serologic reaction of the blood for syphilis was negative. The electrocardiogram revealed low voltage: T_1 and T_2 were upright, T_3 was flat and T_4 inverted. There was left ventricular preponderance.

In association with Dr. Robert W. Wilkins special studies were carried out, part of which are presented in the chart. The patient was placed on a "vitamin B" free diet by administering specially boiled milk and fruit juices. As indicated on the chart, during the control period the vital capacity the oxygen utilization and the osmotic pressure of the blood were low. The venous pressure was high but the velocity of blood flow and the blood pressure were normal. Following the parenteral administration of 80 mg. of thiamin chloride daily there was a better utilization of oxygen and a slowing of the blood flow, indicating arteriolar constriction. Within forty-eight hours

after administration of the first dose of thiamin chloride there was symptomatic improvement and diuresis developed. It is of particular interest that this diuresis occurred while the osmotic pressure of the blood and the venous pressure remained unchanged. For a time the vital capacity became even lower, indicating increased pulmonary congestion, while the peripheral edema was improving. Within two or three weeks, however, all manifestations of cardiovascular disturbance disappeared. The patient lost 60 pounds (27 Kg.) of edema and the vital capacity of the lungs rose from 2.2 liters to 5 liters. The specific gravity of the urine was between 1.026 and 1.030 before the onset of diuresis and remained between 1.007 and 1.009 during the ten day period of diuresis. At the same time the maximal diameter of the heart changed from 17.5 cm. to 13 cm. with an unchanged thoracic diameter of 34 cm. Following the administration of thiamin chloride a slight degree of transient hypertension developed. This hypertension, as pointed out before, occurs only in the presence of a copious diuresis and is not caused directly by thiamin, because subsequent administration of thiamin fails to induce it again. The patient was discharged from the hospital as cured.

CASE 2.—History.—P. H., a white man aged 31, a laborer, who entered the Boston City Hospital on Oct. 27, 1938, complained of dyspnea and swelling. "My body is all swollen up." For three years the patient had been a heavy consumer of whisky and beer and on numerous occasions had not eaten for days. As stated by his relatives, for weeks before entrance he consumed alcohol and drank soup occasionally but refused food. There were periods in the preceding two years when transient dyspnea and swelling of several days' duration developed. During the three months before his hospitalization the dyspnea and edema became more intense. For one month he had experienced orthopnea, a paroxysmal cough, dyspnea and swelling of the abdomen. For one week the complaints had become unbearable and general anasarca had developed. There was no history of rheumatic fever, syphilis, hypertension or other organic heart disease. The rest of the history was irrelevant.

On examination he appeared to be robust and slightly obese. The face was flushed. There was pronounced dyspnea and a moderate degree of orthopnea. There was no cyanosis, and the skin was warm and covered with perspiration. The vessels of the eyegrounds were normal. The heart was enlarged, 14 cm. to the left of the sternum in the fifth intercostal space. The cardiac impulse was prominent. The pulmonary second sound was accentuated. The heart rate was 120 per minute. No murmurs were heard. There was a protodiastolic gallop rhythm. The arteries were soft. Pistol sounds were heard with each pulsation over the femoral artery. The arterial pressure fluctuated around 90 systolic, 60 diastolic mm. of mercury. No abdominal organs were palpated. Cutaneous sensation was normal. The deep reflexes over the lower extremities were absent. There was a marked degree of generalized edema.

The hemoglobin content was 81 per cent and the red cell count 4.2 million. The white blood cell count was 8,200. Serologic reaction of the blood for syphilis was negative. The nonprotein nitrogen of the blood was 67 and later 56 mg. per hundred cubic centimeters. The carbon dioxide combining power of the blood was 37 volumes per cent. The fasting blood sugar was 100 mg. and the protein 6.3 Gm. per hundred cubic centimeters. The electrocardiogram revealed sino-auricular tachycardia with a rate of 125 per minute. The PR interval was 0.16, the QRS 0.08; T₁ and T₂ were upright, T₃ was inverted and T₄ upright. The QT interval was 0.28. The venous pressure was between 19 and 20 cm. of water and the circulation time thirteen seconds. The dynamics and protein content of the spinal fluid were normal. X-ray examination of the chest revealed an enlarged cardiac shadow with a pronounced degree of congestion of both lungs. The patient was given boiled milk and digitalized within twenty-four hours. The following day the condition remained unchanged. On the evening of October 29 rather unexpectedly the heart rate became faster and early manifestations of circulatory collapse appeared. Twenty mg. of thiamin chloride was administered intramuscularly without avail, and the patient died October 30.

Necropsy.—The lungs were markedly congested. The heart weighed 500 Gm. The myocardium was flabby. All chambers,

but particularly the right ventricles, were dilated. The valves, endocardium, pericardium and coronary vessels were normal. Microscopic examination revealed "interstitial edema" between the myocardial fibers, particularly around the vessels. There was increased collagen also. Vacuolization was present in the conduction bundles. All other structures were normal. The other organs, including the kidneys and blood vessels, were normal.

CASE 3.—History.—J. D., a white man aged 29, a laborer, who entered the Boston City Hospital Sept. 15, 1939, complained mainly of dyspnea of three days' duration and difficulty with walking for a few weeks previous to his hospital entrance. The patient was a chronic consumer of alcohol and his diet was grossly inadequate in vitamins. He had been in the hospital with acute alcoholism in December 1936 and May 1937. On entrance he was disoriented. He was well developed and well nourished. The head, including the eyegrounds, was normal. There was venous engorgement of the neck. The heart was moderately enlarged to percussion. The rate was 110 and regular. No murmurs were heard. The temperature and respiration were normal. The arterial pressure was 116 systolic, 80 diastolic. There was dullness to flatness with rales over the bases of the lungs. Edema was not present. The rest of the examination was negative except for absence of deep reflexes of the lower extremities. Soon after arrival at the hospital the patient became more disoriented, circulatory collapse developed rather unexpectedly and he died three hours after he had been admitted.

Necropsy.—The heart weighed 560 Gm. The cardiac chambers were moderately distended. The lungs were congested and edematous. Microscopic examination revealed a normal myocardium except for slight edema around the blood vessels and between the muscle fibers. There was slight central hemorrhagic necrosis of the liver. The rest of the gross and microscopic examination of the organs, including the kidneys and blood vessels, was negative.

These three cases are examples of different courses of the disease. The first patient suffered from a severe and acute type of beriberi, characterized mainly by right sided heart failure and changes in the peripheral vascular system. Thiamin chloride induced diuresis of 60 pounds, contraction of the arterioles and return to normal of the cardiac and pulmonary functions. The second patient had chronic thiamin deficiency varying in degree over a period of at least three years. He had suffered from several attacks of mild "wet" beriberi. On admission there was a pronounced degree of heart failure of the right and left sided type. Death due to vasomotor collapse occurred with unexpected rapidity, before thiamin could exert its beneficial effect. The heart was not only dilated but also hypertrophied. The third patient had only a mild degree of heart failure, and fulminating fatal vasomotor collapse developed. Again necropsy revealed dilatation and hypertrophy of the myocardium with interstitial edema, hydropic degeneration and necrosis of some of the muscle fibers. Thus, as reported by us before, chronic "beriberi heart" can result in myocardial hypertrophy.

COMMENT

Conclusive evidence of the existence of beriberi with cardiovascular disturbances in this country lends interest to a study and interpretation of the earlier literature. The question may well be raised as to the clinical interpretation of this disease prior to the discovery of its relation to vitamin deficiency.

So keen a physician as Graham Steell¹⁶ remarked in 1906 of the clinical characteristics of dropsy:

Capricious distribution of dropsy is specially apt to occur in cases of the cardiac muscle-failure of beer-drinkers and

16. Steell, Graham: *Textbook on Diseases of the Heart*, Manchester, England, University Press, 1906, p. 18.

of the disease known as beriberi, of both of which diseases, it is curious to note, peripheral neuritis is a clinical feature. . . . Curious special localization of oedema met with, in cases of the kind, have been the scrotum, and together the upper trunk, upper extremities, and scalp and neck, so that oedema simulates that resulting from mediastinal tumour.

I have been told that experienced clinicians in this country have recognized for some time a condition described as "alcoholic myocarditis" and that in the South they were aware that patients with pellagra were poor surgical risks because of the danger of cardiac death and circulatory collapse. In 1924 Magniel¹⁷ described cases of heart disease (le "cœur mou") in association with the consumption of large amounts of alcohol. Patients with this condition had enlarged hearts, gallop rhythm, as a rule obesity and often polyneuritis. May¹⁸ described a similar case in a cook aged 34. Mondon¹⁹ reported a case in which death from delirium tremens occurred at the age of 23, the heart weighing 530 Gm. and interstitial edema being present in the myocardium. In four cases of myocardial disease associated with polyneuritis Hanns and Warter²⁰ found the etiology to be either obscure or attributable to alcohol. In 1933 Campbell and Allison²¹ reported in Ireland a series of eight cases of polyneuritis in which the symptoms of cardiovascular dysfunction were more prominent than the neuritic signs. The nature of these cases is not clear from the report, but the authors raise the question of beriberi. "The cases described here bear some resemblance to the milder types of the disease as it is described in the East. Had these cases been seen in the Orient, it is not improbable that they would have been attributed to that cause. On the other hand, it is open to question whether varied diet of the European could ever become so deficient in vitamin B as to give rise to polyneuritis with cardiac changes." They concluded finally that these cases were probably of an infective rather than of a deficiency origin.

Sporadic instances of heart failure attributed to beriberi in both adults and infants have also been reported in the United States. Kepler²² observed the occurrence of beriberi as a result of a starch diet. Wohl²³ described the polyneuritic form of beriberi in a young diabetic patient who lived on an unbalanced diet. Scott and Herrmann²⁴ reported cardiac manifestations of beriberi among rice workers in Louisiana. Riesman and Davidson²⁵ found beriberi heart in a case after severe voluntary dietary restrictions. In none of the aforementioned publications was the relation of the cardiovascular disturbances to thiamin deficiency appreciated.

Following our investigation reported in 1936, Jones and Sure²⁶ reported a group of eighteen cases of

cardiac insufficiency treated successfully with high vitamin diet and vitamin B₁ concentrate. Hashimoto's case²⁷ is of interest because there were clinical manifestations of both left and right ventricular failure. In this case administration of thiamin chloride intravenously brought dramatic relief from precordial distress, dyspnea and nausea starting within two or three hours. Improvement was progressive thereafter.

Goodhart and Jolliffe²⁸ studied eighty-three alcohol addicts who presented no evidence of chronic cardiovascular disease or renal disturbance. Sixty-five patients of this group had symptoms of dietary deficiency, mainly polyneuritis, and 32.3 per cent had electrocardiographic abnormalities. These authors stated that their observations supported the contention that beriberi in all its manifestations is found among alcohol addicts in this country. They estimated that approximately one third of the alcohol addicts who show vitamin B₁ deficiency in the form of peripheral neuritis present clinical evidence of some degree of cardiovascular dysfunction secondary to this deficiency.

Cossio and Moia²⁹ have reported successful thiamin treatment of cases of beriberi heart occurring in Argentina. In Sweden, Nylin³⁰ observed instances of beriberi heart with marked congestive failure, which responded to thiamin chloride with prompt improvement. Schultz³¹ reported cases of beriberi heart occurring in Finland. Van Bogaert³² presented in detail the case of a young person in Belgium who as a result of alcoholic beriberi developed dilated heart, electrocardiographic changes and circulatory failure. Following the administration of thiamin chloride there was rapid improvement and recovery. In Ungley's case in England a young man with pyloric stenosis and peptic ulcer developed dyspnea and edema.³³ The heart was not enlarged, the circulation time was normal, the venous pressure was elevated, the diastolic pressure was low and changes in the electrocardiogram were present. Administration of thiamin chloride was followed by dramatic improvement and disappearance of all the changes. Jones and Bramwell³⁴ described the occurrence of a classic case of beriberi with severe failure of the circulation in a beer drinker aged 36. Diuresis started twenty-four hours after the administration of thiamin chloride and within two weeks practically all symptoms and signs had disappeared. Yudkin³⁵ studied a case of "wet" beriberi with cardiac manifestations in a man aged 25 whose diet consisted mainly of polished rice. The administration of thiamin chloride effected rapid improvement.

Langeron reported the occurrence of beriberi with cardiac manifestations in France³⁶ and discussed the

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20. Hanns, Alfred, and Warter J.: Myocardite éthylique, Arch. d. mal. du cœur 26: 391 (June) 1933.

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23. Wohl, M. G.: Avitaminosis in the Course of Diabetes: Occurrence in a Case, with Symptoms and Lesions of Beriberi Predominating, J. A. M. A. 87: 901 (Sept. 18) 1926.

24. Scott, L. C., and Herrmann, G. R.: Beriberi ("Maladie des Jambe") in Louisiana, with Special Reference to Cardiac Manifestations, J. A. M. A. 90: 2083 (June 30) 1928.

25. Riesman, David, and Davidson, H. S.: Beriberi Following Drastic Voluntary Dietary Restriction, J. A. M. A. 102: 2000 (June 16) 1934.

26. Jones, W. A., and Sure, Barnett: The Role of Vitamin B₁ in Cardiovascular Diseases, J. Lab. & Clin. Med. 22: 991 (July) 1937.

27. Hashimoto, Hirotschi: Acute Pernicious Form of Beriberi and Its Treatment by Intravenous Administration of Vitamin B₁ with Especial Reference to Electrocardiographic Changes, Am. Heart J. 13: 580 (May) 1937.

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29. Cossio, Pedro, and Moia, B.: Alteraciones cardiovasculares por deficiencia de vitamina B₁, Dia méd. 9: 1148 (Dec. 27) 1937.

30. Nylin, G.: Avitaminosis-B₁ as a Cause of Cardiac Insufficiency, Nord. med. Tidskr. 15: 627 (May 21) 1938.

31. Schultz, Paul: Cardiac Insufficiency and Edema as Sequels of Beriberi, Ugeskr. f. Læger 101: 268 (March 2) 1939.

32. van Bogaert, Adalbert: Bérubéri alcoolique, Arch. d. mal. du cœur 31: 1195 (Dec.) 1938.

33. Ungley, C. C.: The Clinical Manifestations of Vitamin B₁ Deficiency, Newcastle M. J. 19: 43 (April) 1939.

34. Jones, A. M., and Bramwell, Crighton: Alcoholic Beriberi Heart, Brit. Heart J. 1: 187 (July) 1939.

35. Yudkin, John: A Case of Beriberi Occurring in London, Lancet 2: 1347 (Dec. 10) 1938.

36. Langeron, Léon: Avitaminose B₁ et insuffisance cardiaque: Le cas de la "myocardie alcoolique" assimilable à un "beriberi nostras," Presse méd. 47: 1189 (Aug. 2) 1939.

relation of these cases to thiamin deficiency. Bickel^{36a} observed cardiac failure as the result of thiamin deficiency among chronic alcoholic addicts and pregnant women in Switzerland. Beneficial response was noted after the administration of thiamin. Dustin, Weyler and Roberts³⁷ analyzed the electrocardiographic changes in several cases in which there were histories of unbalanced diet and clinical evidence of vitamin B₁ deficiency. Their observations concurred with ours in noting an increase in the duration of the electric systole, rapid rate, tendency to low voltage and in most cases flattening of the T wave in leads 1, 2 and 3. During treatment with thiamin chloride, slowing of the heart rate, increase in voltage and varying changes in the ventricular complexes occurred in all cases.

Williams, Mason and Smith³⁸ placed four young women on a diet deficient in thiamin for a period of twenty-one weeks. Anorexia, fatigue, loss of weight, absence of or low free gastric acid, constipation and tenderness of the calf muscles developed. Abnormalities in the electrocardiograms developed in all four cases. The amplitude of all complexes decreased and the daily output of thiamin fell to an unusually low average level of 14 micrograms. Within twelve days after the administration of only 4 mg. of thiamin chloride all defects incident to the previous deficiency had disappeared.

In a recent chemical study of the urinary excretion of thiamin in various clinical conditions, Robinson, Melnick and Field³⁹ observed that in three cases of "alcoholic beriberi," including one of "beriberi heart," the excretion of thiamin was abnormally small. It is of special interest that six of the seven patients with heart failure due to organic heart disease had values indicative of thiamin subnutrition. Likewise it is pertinent that the twenty-four hour urinary thiamin excretion in subjects whose previous dietary intake of thiamin had been adequate, and who ingested an adequate diet on the day of the test, was 90 micrograms or more in all males and more than 60 micrograms in all females but one.

Cardiac complications have been reported in vitamin deficiencies other than thiamin. With the exception of hemorrhagic pericardial effusion in ascorbic acid deficiency, these disturbances should be considered as part of the coexisting beriberi. Thus Feil⁴⁰ described electrocardiographic changes in pellagra. Erdheim⁴¹ observed cardiac dilatation and hypertrophy on post-mortem examination of thirty-one Viennese children who had died with the clinical picture of scurvy in the famine year of 1918. Meixner⁴² observed dilatation and slight hypertrophy of the left ventricle in children suffering from rickets.

EXPERIMENTAL EVIDENCE ON THIAMIN DEFICIENCY AND CARDIAC DYSFUNCTION

The clinical and experimental evidence in man just presented indicates clearly that beriberi, both "dry" and

"wet," is a disease of regular occurrence in America as well as in Europe. The two diseases as observed in the Orient and in the Occident are essentially identical. The dietary history and the clinical response to and reduced excretion of thiamin chloride indicate that in the etiology of "beriberi heart" thiamin deficiency is a primary factor. It is possible that other factors contribute to the disease.⁴³ The relation of thiamin deficiency to heart disease, however, became even more firmly established as a result of recent investigations on animals. In 1930 Drury, Harris and Maudsley⁴⁴ observed a slowing of the heart rate in rats fed on diets deficient in vitamin B₁. Pigeons fed on polished rice also showed bradycardia and in some cases heart block.⁴⁵ Méhes and Péter,⁴⁶ studying the electrocardiograms of rice-fed pigeons, observed that the PR interval was slightly increased and the S and T waves were slightly lower in some of the deficient birds than in the controls. We have studied the effect of thiamin deficiency on rats.³ In all but four or five of the twenty-two thiamin-deficient animals the decrease in heart rate was accompanied by changes in the electrocardiographic complexes, consisting most frequently of an increase in height, flattening, inversion or high or low take-off of the T waves and depression of the S-T segments. From several hours to a day after the subcutaneous administration of thiamin chloride the electrocardiographic changes disappeared in most instances, although occasionally several days was required. The effect of exercise on thiamin deficiency has been studied on four rats. In these animals, allowed to exercise on the running wheel, the cardiac changes were no more marked, of no different character and in only one instance quicker to develop than in the control, nonexercising, thiamin deficient animals. Epinephrine induced cardiac irregularity in some of the thiamin deficient rats. Administration of atropine and section of the vagus nerves did not abolish the cardiac slowing or the electrocardiographic changes produced by thiamin deficiency. The thiamin deficient animals showed increased sensitivity to the toxic effects of strophanthin as borne out by electrocardiographic changes. In a subsequent study we⁵ concluded that the accumulation of intermediary metabolites plays no significant role in the production of cardiac manifestations in thiamin deficient rats. The finding supports the concept that the manifestation of thiamin deficiency depends on a defect in metabolism rather than on a toxic effect of circulatory metabolites. Large doses of thiamin chloride produced no toxic effects and had little if any influence on the heart rate and electrocardiographic complexes of normal rats and dogs. A vagotonic effect of thiamin on the dog heart could not be definitely established.

De Soldati⁴⁷ has studied the circulatory disturbances in thirteen thiamin deficient dogs. In 90 per cent the heart rate became markedly elevated and in 70 per cent the arterial pressure fell. In eleven dogs on which

36a. Bickel, Georges: Hypovitaminose B₁ et cardiopathies: Le rôle de la carence en vitamine B₁ dans la pathogénie des troubles cardiovasculaires des éthyliques chroniques, Arch. d. mal. méd. du cœur 32: 637 (July) 1939; 11. Le rôle de la carence en vitamine B₁ dans la pathogénie des troubles cardiaques de la gravidité, ibid. 32: 769 (Aug.) 1939.

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38. Williams, R. D.; Mason, H. L., and Smith, B. F.: Induced Vitamin B₁ Deficiency in Human Subjects, Proc. Staff Meet., Mayo Clin. 14: 787 (Dec. 13) 1939.

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40. Feil, Harold: A Clinical Study of the Electrocardiogram and of the Phases of Cardiac Systole in Pellagra, Am. Heart J. 11: 173 (Feb.) 1936.

41. Erdheim, J.: Ueber das Barlow-Herz, Wien. klin. Wchnschr. 31: 1293, 1918.

42. Meixner, K.: Die Erweiterung der linken Herzkammer bei Rachitis, Wien. klin. Wchnschr. 47: 1273 (Sept. 6) 1928.

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46. Méhes, J., and Péter, F.: E. Ekg. der normalen und der an Ekg. Tauben, Arch. f. exper. Path. u. Pharmacol. 110: 1, 1934. 47. De Soldati, León: Los trastornos circulatorios del perro en avitaminosis B₁, I. El pulso, la tensión arterial y el electrocardiograma, Rev. Soc. argent. de biol. 15: 142 (July) 1939.

electrocardiograms were taken, increased cardiac rate, enlargement of the P waves, changes in the T waves, depression of the S-T segments and prolongation of the Q-T intervals developed. Following administration of thiamin chloride, these changes disappeared. Porto and de Soldati⁴⁸ have studied subsequently the myocardium of four thiamin deficient and two control dogs. The thiamin deficient animals revealed dilatation of the right auricle in all cases and in two of the right ventricle. Intercellular edema and vacuolization of the myocardial conductor and ganglionic fibers were observed. The changes observed by these investigators were similar to those described in human beriberi by Aalsmeer and Wenckebach and by us. These changes are not considered by us as specific, for we were able to demonstrate similar changes in other types of heart disease. Swank and Bessey⁴⁹ induced cardiac failure in pigeons with thiamin deficiency. They observed that if pigeons were slowly depleted of their thiamin on a partially thiamin deficient diet, and if starvation was prevented by tube feeding, dyspnea developed in from three to six weeks. The electrocardiograms showed changes in the QRS complex and in the T waves, together with tachycardia. Administration of thiamin chloride produced rapid recovery in all but the most advanced cases. Post-mortem examination revealed hydropericardium, pulmonary edema and congestion of the lungs and liver. The myocardium of a large percentage of the animals showed focal necrosis. Bradycardia in thiamin deficiency was present only if there was simultaneous starvation. Finally Swank, Porter and Yeomans⁵⁰ found that if a diet partially deficient in thiamin chloride is fed to dogs by tube, they may, after from eight to twelve weeks, develop dyspnea and pulmonary rales and exhibit definite abnormalities of the electrocardiogram. If the animals died during the course of this disorder, at postmortem they showed signs of left ventricular failure (pulmonary congestion and edema). The administration of thiamin chloride promptly resulted in great improvement in the circulation in these animals unless they were actually moribund.

CONCLUSIONS

1. Beriberi both with nervous and with cardiovascular manifestations exists in America and in Europe. Whereas in Oriental beriberi polished rice plays a significant predisposing role, alcohol is the calorogenic substance frequently associated with deficient vitamin intake in the Occident.

2. The clinical features and mechanism of "alcoholic" and "nonalcoholic" beriberi are essentially the same. Similarly, no significant difference could be established between "Oriental" and "Occidental" beriberi.

3. The cardiovascular manifestations of beriberi are related to thiamin deficiency, but other factors may play a secondary role.

4. The evidence now available on the causative relation between thiamin deficiency and cardiovascular dysfunction of beriberi is (a) thiamin deficiency in the diet, (b) decreased thiamin content in the urine, (c) disappearance of the disease after the administration of thiamin chloride, (d) induction of electrocardiographic changes in healthy men consuming a diet lacking only thiamin chloride, (e) induction in animals on a

thiamin deficient diet of cardiac disturbances, including cardiac dilatation, electrocardiographic changes, congestive failure of the circulation and structural changes similar to or identical with those observed in man, and (f) disappearance of the experimentally induced cardiovascular dysfunction in animals after administration of thiamin chloride.

VITAMIN B₆ (PYRIDOXIN) DEFICIENCY IN HUMAN BEINGS

FURTHER STUDIES, WITH SPECIAL EMPHASIS ON
THE URINARY EXCRETION OF PYRIDOXIN

TOM D. SPIES, M.D.

CINCINNATI

ROLF K. LADISCH, M.A.

NORTHFIELD, MINN.

AND

WILLIAM B. BEAN, M.D.

CINCINNATI

Last year Spies, Bean and Ashe¹ described a syndrome in four persons characterized by "extreme nervousness, insomnia, irritability, abdominal pain, weakness and difficulty in walking," which disappeared dramatically following the intravenous administration of 50 mg. of synthetic vitamin B₆ (pyridoxin). Since this report was published we have observed and treated with identical results twenty similar cases in which there were residual symptoms of nutritional deficiency which could not be relieved with synthetic nicotinic acid, synthetic thiamine hydrochloride or synthetic riboflavin.² In order to obtain more evidence concerning this deficiency state in human beings, we have used the method devised by Scudi, Unna and Antopol³ to investigate the urinary excretion of normal persons taking an adequate diet and of persons with clinical evidence of pellagra, beriberi, riboflavin deficiency and vitamin B₆ deficiency.

MATERIAL AND METHODS

Five normal persons in the laboratory and six patients whose deficiency syndromes were showing clinical improvement were selected as controls. Urine obtained from twelve patients from the Nutrition Clinic of the Hillman Hospital was tested one or more times. These patients had diagnostic evidence of one or more advanced deficiency disease syndromes (nicotinic acid amide nine, pyridoxin four, riboflavin four, thiamine three). Nine of these patients were studied while ambulatory. The other three patients with similar inter-related deficiencies were arbitrarily selected for hospitalization and restricted for three weeks to a deficient diet before any test was done.

The method of Scudi, Unna and Antopol³ was used to determine the level of pyridoxin in the urine. (It

University of Cincinnati Studies in Nutrition at the Hillman Hospital, Birmingham, Ala.

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From the Department of Internal Medicine, University of Cincinnati College of Medicine, the Department of Chemistry, Carleton College, Northfield, Minn., and the Department of Preventive Medicine, University of Texas Faculty of Medicine, Galveston.

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3. Scudi, J. V.; Unna, Klaus, and Antopol, William: A Study of the Urinary Excretion of Vitamin B₆ by a Colorimetric Method, unpublished observations.

48. Porto, Jorge, and de Soldati, León: Alteraciones microscópicas del corazón del perro en avitaminosis B₁, *Rev. Soc. argent. de biol.* **15**:303 (Oct.) 1939.

49. Swank, R. L., and Bessey, O. A.: The Cardiac Failure in Thiamin Deficient Pigeons (abstract), *J. Clin. Investigation*, to be published.

50. Swank, R. L.; Porter, R. R., and Yeomans, A.: The Circulatory Effects of Vitamin B₁ Deficiency in the Dog, to be published.

was possible by this method to recover 100 per cent of the material from a control urine sample.) The tests were usually made in the morning, three or more hours after breakfast, since individuals on a good diet show an increased excretion of test producing substances after meals. The patient voided at a specified time and drank one or two glasses of water. The urine was collected exactly one hour later. Fifty mg. of pyridoxin⁴ was then given intravenously, and a sample of urine was collected one hour after the injection. A 5 cc. sample of the urine was diluted with water to 25 or 50 cc. for the test. The blue color produced by this substance was sometimes found in the control specimen, usually in traces only. This value was subtracted from that of the sample for the second hour.⁵

RESULTS

The five normal males excreted an average of 7.9 per cent of the injected pyridoxin in the first hour, with a range of 10.9 to 6.7 per cent. This is in agreement with the finding of 8.7 per cent³ in normal subjects. The six patients without active deficiency disease excreted an average of 8.6 per cent with extremes of 13.2 to 5.4 per cent. In this regard they did not vary from the normal. The group of nine ambulatory patients with evidence of various vitamin B complex deficiencies excreted an average of 0.5 per cent of the 50 mg. of pyridoxin injected, with a range of 1.5 to 0.0 per cent. The four ambulatory patients suspected of having a vitamin B₆ deficiency excreted an average of 0.2 per cent, with a range of 0.4 to 0.0 per cent. One of these was a patient treated successfully with vitamin B₆ last year.¹

The three hospitalized patients were tested at the end of three weeks. Two did not excrete any of the pyridoxin given intravenously, while the other excreted only 0.1 per cent. Most of the patients were definitely improved following the injection of the vitamin.

SUMMARY AND CONCLUSIONS

1. The present study shows that within one hour following the intravenous injection of 50 mg. of pyridoxin the average urinary excretion of this material was 7.9 per cent in normal persons and 8.6 per cent in pellagrins who at the time they were studied did not have active vitamin deficiency. These figures are in agreement with those of Scudi, Unna and Antopol, who observed an average excretion of 8.7 per cent.

2. Nine ambulatory patients with clinical evidence of either pellagra, beriberi or riboflavin deficiency excreted an average of 0.5 per cent of the 50 mg. of pyridoxin injected, with a range of from 1.5 to 0.0 per cent. The four patients in this group suspected of having a vitamin B₆ deficiency showed the lowest excretion of any studied, averaging only 0.2 per cent. It is of interest that one of these patients was treated last year for vitamin B₆ deficiency and was having a recurrence.

3. The three patients with clinical deficiency disease who were hospitalized and restricted to a diet deficient in vitamin B₆ excreted almost none of the injected pyridoxin. This observation indicates that absorption of vitamin B₆ is somewhat dependent on the diet.

4. These results show that vitamin B₆ is important in human nutrition and gives strong support to the hypothesis that clinical deficiency diseases occur not as single entities but as complexities.

4. Supplied by Merck & Co., Inc., and E. R. Squibb & Sons.

5. The administration of acetylsalicylic acid to these patients interferes with this test.

SULFATHIAZOLE

CLINICAL EVALUATION

WESLEY W. SPINK, M.D.

AND

ARILD E. HANSEN, M.D.

MINNEAPOLIS

The successful therapeutic application of sulfanilamide in certain infectious diseases has stimulated investigation of other derivatives of this chemical compound. At the present time there is considerable interest in the thiazole analog of sulfapyridine known as sulfathiazole. This report includes a brief review of the literature concerning the pharmacology, toxicology and therapeutic possibilities of sulfathiazole and presents the results of our clinical experience with sulfathiazole and its sodium salt in the treatment of 128 patients suffering from pneumonia, staphylococcal sepsis and infections of the urinary tract.

Sulfathiazole was first described by Fosbinder and Walter¹ and by Lott and Bergeim.² Van Dyke and his associates³ studied the pharmacology of the drug and concluded that it more rapidly metabolized and underwent less conjugation than sulfapyridine. When the sodium salts of the two compounds were given to mice, they found that sulfathiazole possessed but 65 per cent of the toxicity of sulfapyridine. Long and his co-workers⁴ likewise have stated that sulfathiazole was absorbed more readily and excreted more rapidly than sulfapyridine. They also found that, following the administration of a single dose to human beings, from 80 to 90 per cent of the sulfathiazole was recovered in the urine within twenty-four hours and that, compared with sulfapyridine, definitely less of the excreted sulfathiazole was in the conjugated form. In mice the sodium salt of sulfathiazole possessed an acute toxicity one third greater than that of sulfanilamide but one half that of sulfapyridine. Their observations call attention to a most significant point concerning the toxicity of other thiazole derivatives in that when methyl and phenyl groups were introduced the acute toxicity of sulfathiazole for mice was increased by more than 50 per cent. Reinhold, Flippin and Schwartz⁵ summarized their experience with the compound when given to human subjects as follows: Sulfathiazole was rapidly absorbed from the gastrointestinal tract and rapidly excreted in the urine; following an intravenous injection of the sodium salt, recovery was practically quantitative in the urine; sulfathiazole was poorly absorbed from the rectum; the extent of conjugation was low in most instances; only transitory effects were observed on renal function and the hemopoietic system; the incidence of toxic manifestations was low, vomiting occurring in about 10 per cent of the cases, never severe enough to necessitate discontinuing the drug. More recently Pep-

From the Departments of Internal Medicine and Pediatrics of the University Hospitals and the University of Minnesota Medical School.

1. Fosbinder, R. J., and Walter, L. A.: Sulfanilamide Derivatives of Heterocyclic Amines, *J. Am. Chem. Soc.* **61**: 2032 (Aug.) 1939.

2. Lott, W. A., and Bergeim, F. H.: 2- (Aminobenzenesulfonamido)-Thiazole: A New Chemotherapeutic Agent, *J. Am. Chem. Soc.* **61**: 3593 (Dec.) 1939.

3. van Dyke, H. B.; Greep, R. O.; Rake, Geoffrey, and McKee, Clara M.: Observations on the Toxicology of Sulfathiazole and Sulfapyridine, *Proc. Soc. Exper. Biol. & Med.* **42**: 410 (Nov.) 1939.

4. Long, P. H.; Haviland, J. W., and Edwards, Lydia B.: Acute Toxicity, Absorption and Excretion of Sulfathiazole and Certain of Its Derivatives, *Proc. Soc. Exper. Biol. & Med.* **43**: 328 (Feb.) 1940.

5. Reinhold, J. G.; Flippin, H. F., and Schwartz, Leon: Observations on the Pharmacology and Toxicology of Sulfathiazole in Man, *Am. J. M. Sc.* **139**: 393 (March) 1939.

per and Horack⁶ have brought forth evidence that in the human subject sulfathiazole recrystallized in the kidney tubules, whereas sulfapyridine crystallized most frequently in the renal pelvis and ureters. Because of this tendency for intrarenal precipitation of sulfathiazole, they are of the opinion that renal complications following its use will be more serious than those following the use of sulfapyridine. Their microscopic studies of human kidneys confirmed the earlier work of Gross, Cooper and Scott,⁷ who noted that in white rats sulfathiazole crystallized in the distal collecting tubules.

Turning now to the experimental work concerning the therapeutic possibilities of sulfathiazole, one is confronted by confusing statements, owing in part perhaps to the different technics employed by the various investigators. However, enough uniformity does exist to permit a reasonably intelligent approach to sulfathiazole therapy in certain infections of man. The data of McKee, Rake, Greep and van Dyke⁸ indicate that the therapeutic effect of sulfathiazole in mice was equivalent to that of sulfapyridine for infections due to the pneumococcus, beta hemolytic streptococcus and meningococcus. Both compounds were appreciably effective against the agent of venereal lymphogranuloma but neither affected the viruses of swine influenza or herpes simplex. Long and Bliss⁹ concluded that sulfathiazole as a bacteriostatic agent was as effective as sulfapyridine in broth cultures of Lancefield's groups A, D and G strains of the beta hemolytic streptococcus, *Escherichia coli*, *Staphylococcus aureus*, pneumococcus types I and II and *Bacillus proteus*. Sulfathiazole was slightly less effective in the control of pneumococcal infections in mice, but the difference was partially invalidated because of the more rapid absorption and excretion of sulfathiazole. On the other hand, Lawrence¹⁰ stated that sulfathiazole had a superior inhibitory action on the growth of pneumococci types I, II and III, group A beta hemolytic streptococcus and gonococcus. As a result of the *in vitro* studies of Rake and McKee¹¹ and of Rammelkamp and Keefer,¹² it would appear that sulfathiazole had greater bacteriostatic activity for *Staphylococcus aureus* than either sulfapyridine or sulfanilamide. Likewise, mice infected with *Staphylococcus aureus* were protected to a greater degree with sulfathiazole than with sulfapyridine.¹³

There is experimental evidence that sulfathiazole will be as effective as sulfanilamide and sulfapyridine, if not more so, in the therapy of infections of the urinary tract. Helmholz¹⁴ found that sulfathiazole had a bactericidal action on strains of *Streptococcus faecalis*,

whereas sulfanilamide or sulfapyridine did not. Sulfathiazole also readily killed strains of *Bacillus proteus*. Neter¹⁵ has confirmed the superior bacteriostatic action of sulfathiazole on *Streptococcus faecalis* (enterococci). Hill¹⁶ concluded that sulfanilamide, sulfapyridine and sulfathiazole had an equal bacteriostatic action on strains of *Staphylococcus aureus*, *Streptococcus faecalis*, *Escherichia coli*, *Aerobacter aerogenes* and *Bacillus proteus*.

Only a few reports are available concerning the value of sulfathiazole in the treatment of human infections. In a preliminary report for the Council on Pharmacy and Chemistry of the American Medical Association, Long¹⁷ was of the opinion that sulfathiazole was about as effective as sulfapyridine in the treatment of pneumococcal pneumonia, and possibly more effective in staphylococcal infections. Fitch¹⁸ reported a case of septicemia and pyemia due to *Staphylococcus aureus* successfully treated with sulfathiazole. Pool and Cook¹⁹ treated fifteen patients having infections of the urinary tract with sulfathiazole and stated that the drug was as efficient as the other sulfanilamide derivatives and more so in infections due to *Staphylococcus aureus*.

TABLE 1.—Incidence of the Various Clinical Conditions

Disease	No. of Cases
Lobar and atypical pneumonia.....	33
Postoperative pneumonia.....	24
Pneumococcal meningitis.....	3
Pneumococcal bacteremia, otitis media and glomerular nephritis.....	1
Pneumococcal abscess (compound fracture).....	1
Staphylococcal sepsis (septicemia—15 cases).....	26
Infections of the urinary tract.....	10
Miscellaneous infections	
Subacute bacterial endocarditis.....	2
<i>Escherichia coli</i> bacteremia.....	2
Gonococcal arthritis.....	4
Septicemia (beta hemolytic streptococcus).....	1
Septicemia (alpha streptococcus).....	1
	123

They maintained that sulfathiazole was less toxic than either sulfanilamide or sulfapyridine. Flippin, Schwartz and Rose²⁰ treated 100 patients having pneumococcal pneumonia with sulfathiazole and an equal number with sulfapyridine. These two drugs appeared to be equally effective. The incidence and severity of nausea and vomiting were much less in the sulfathiazole group, whereas other toxic manifestations were about equal.

MATERIALS AND METHODS

The types of clinical conditions among the 128 patients treated with sulfathiazole are presented in table 1.²¹ In selecting the patients for therapy an attempt was made in each instance to isolate the biologic agent responsible for the disease.

Patients with pneumonia were divided into two main groups: the first included those with lobar or atypical

6. Pepper, D. S., and Horack, H. M.: Crystalline Concretions in the Renal Tubules Following Sulfathiazole Therapy: Widely Patent Foramen Ovale in a Patient Aged 77, *Am. J. M. Sc.* **199**: 674 (May) 1940.

7. Gross, Paul; Cooper, F. B., and Scott, Ruth E.: Urolithiasis Medicamentosa, *Urol. & Cutan. Rev.* **44**: 205 (April) 1940.

8. McKee, Clara M.; Rake, Geoffrey; Greep, R. O., and van Dyke, H. B.: Therapeutic Effect of Sulfathiazole and Sulfapyridine, *Proc. Soc. Exper. Biol. & Med.* **42**: 417 (Nov.) 1939.

9. Long, P. H., and Bliss, Eleanor A.: Bacteriostatic Effects of Sulfathiazole upon Various Micro-Organisms: Its Therapeutic Effects in Experimental Pneumococcal Infections, *Proc. Soc. Exper. Biol. & Med.* **43**: 324 (Feb.) 1940.

10. Lawrence, C. A.: Bacteriostatic Actions of Three Thiazole Derivatives of Sulfanilamide on Bacteria in Broth Cultures, *Proc. Soc. Exper. Biol. & Med.* **43**: 92 (Jan.) 1940.

11. Rake, Geoffrey, and McKee, Clara M.: Action of Sulfathiazole and Sulfamethylthiazole on *Staphylococcus Aureus*, *Proc. Soc. Exper. Biol. & Med.* **43**: 561 (March) 1940.

12. Rammelkamp, C. H., and Keefer, C. S.: Sulfathiazole: Effect on *Staphylococcus Aureus* *In Vitro*, *Proc. Soc. Exper. Biol. & Med.* **43**: 664 (April) 1940.

13. Bliss, Eleanor A., and Ott, Earl: Effect of Sulfapyridine, Sulfathiazole and Sulfamethylthiazole on Severe Staphylococcal Infections in Mice, *Proc. Soc. Exper. Biol. & Med.* **43**: 706 (April) 1940. Rake and McKee.

14. Helmholz, H. F.: The Bactericidal Effect of Sulfathiazole and Sulfamethylthiazole in Bacteria Found in Urinary Infections, *Proc. Staff Meet., Mayo Clin.* **15**: 65 (Jan. 31) 1940.

15. Neter, Edwin: Comparative Study on Bacteriostatic Action of Sulfanilamide, Sulfanilamide and Sulfathiazole on Enterococci, *J. Biol. Chem.* **43**: 774 (April) 1940.

16. Hill, Justina H.: The Comparative *In Vitro* Action of Sulfanilamide, Sulfapyridine and Sulfathiazole in Urine, *J. Urol.* **43**: 491 (March) 1940.

17. Long, P. H.: Sulfathiazole and Sulfamethylthiazole, *J. A. M. A.* **114**: 870 (March 9) 1940.

18. Fitch, T. S. P.: Sulfathiazole in *Staphylococcus Aureus*: Epidural Abscess with Septicemia and Pyemia, *Arch. Pediat.* **57**: 119 (Feb.) 1940.

19. Pool, T. L., and Cook, E. N.: Sulfathiazole and Sulfamethylthiazole in the Treatment of Infections of the Urinary Tract, *Proc. Staff Meet., Mayo Clin.* **15**: 113 (Feb. 21) 1940.

20. Flippin, H. F.; Schwartz, Leon, and Rose, S. B.: The Comparative Effectiveness and Toxicity of Sulfathiazole and Sulfapyridine in Pneumococcal Pneumonia, *Ann. Int. Med.* **13**: 2038 (May) 1940.

21. The sulfathiazole was supplied to us by Dr. George A. Harber, director of the Squibb Institute for Medical Research.

pneumonia and the second comprised those having post-operative pneumonia. The sputum was examined bacteriologically in all instances in which it was possible, and if pneumococci were present the Neufeld method was employed in typing. Blood cultures were obtained from all the patients with pneumonia before therapy was instituted.

The following data from the patients were obtained for purposes of therapeutic evaluation of the sulfathiazole: age; time of onset of illness; extent of pulmonary involvement; complicating factors, such as alcoholism, pregnancy and concurrent diseases; serial x-ray films of the lung fields during therapy, and effect of therapy on the clinical course, temperature, pulse, respiration and blood morphology. The oral dosage of sulfathiazole in the treatment of older children and adults with pneumonia consisted of an initial dose of from 2 to 4 Gm. and then 1 Gm. every four hours until the temperature remained normal for forty-eight hours. The dose then was gradually reduced and therapy was discontinued on the fifth to the seventh day. The dosage for infants and small children was 0.25 Gm. per kilogram of body weight a day in divided doses for a period of from

TABLE 2.—Distribution of *Pneumococcus* Types Among Thirty-Three Patients with Lobar and Atypical Pneumonia Treated with Sulfathiazole

Pneumococcus Type	No. of Patients	Comment
I	5	1 bacteremia, diabetic acidosis; 1 alcoholic psychosis
III	7	2 cardiac failures, 1 severe jaundice
III and IV	1	
V	2	1 pregnancy
VI	1	
VIII	2	1 died of lung abscess
IX	1	
XI	1	
XVII	1	
XVIII	1	Sinusitis
XIX	1	
XXII	1	
Untyped	9	
	33	

twenty-four to forty-eight hours or until the temperatures dropped to normal; then the dose was gradually reduced and the drug discontinued on the fifth to the seventh day. In the earlier stages of this study we gave from 0.6 to 1 Gm. of sodium bicarbonate with each dose of sulfathiazole, but our later policy, and the one employed at the present time, does not include the administration of the alkali. In three instances type specific antipneumococcus rabbit serum was given in addition to the sulfathiazole. Since postoperative pneumonia is, for the most part, a process of atelectasis with or without an accompanying pneumonitis, sulfathiazole was given in an attempt to abort the spread or development of a pneumonic consolidation. Pneumococci of the higher types were found in the sputum of the majority of these patients. Many could not take medication orally; thus the sodium salt of sulfathiazole was given intravenously. A 5 per cent solution was freshly prepared by dissolving the salt in warm distilled water. Usually 3 Gm. was given as the initial dose and then 1 Gm. every eight hours. Oral therapy was instituted as soon as possible thereafter.

Three patients with pneumococcal bacteremia, mastoiditis and meningitis were treated according to the method of Finland.²² Type-specific antipneumococcus

serum was immediately given intravenously. Shortly thereafter blood was withdrawn and allowed to clot and the serum drawn off and injected intrathecally. The further intrathecal injection of serum containing complement and antibodies depended on the response of the patient. Surgical drainage of the mastoid area was carried out on two of the three patients during the early stages of their illness.

Two groups of patients with staphylococcal infections were treated with sulfathiazole. The first group of twenty-one patients was that presenting localized lesions without demonstrable bacteremia and included such conditions as carbuncles, postoperative wound infections, decubitus ulcers, osteomyelitis, otitis media and empyema. Staphylococci were obtained from the lesions of all these patients. In some cases the topical application of sulfathiazole was employed. The second group consisted of fifteen patients having staphylococcal septicemia. The dose of sulfathiazole was essentially the same as that used in the therapy of patients with pneumonia, except that the drug was given over a longer period of time. Blood cultures were obtained before, during and after sulfathiazole therapy.

Twenty patients with infections of the urinary tract were treated in cooperation with Dr. C. D. Creevy, chief of the division of urology. We were particularly interested in infections due to *Bacillus proteus*, *Escherichia coli* and the staphylococcus. Carefully catheterized specimens of urine were cultured before therapy was begun and again at various intervals after sulfathiazole therapy had been discontinued.

The concentration of the free and conjugated forms of sulfathiazole in the blood were determined²³ by the method of Marshall and Litchfield.²⁴ In the group with infections of the urinary tract, the concentration in the urine was quantitated.

LOBAR AND ATYPICAL PNEUMONIA

The results of sulfathiazole therapy of thirty-three patients with lobar or atypical pneumonia are presented in table 2. Attempts to type pneumococci in the sputums of nine of these patients were unsuccessful because they were first seen very early in the course of illness and were not coughing up any material. Bacteremia was demonstrated in only one case. Death of but one of these thirty-three patients occurred, and this subject was an elderly man who died three months after the onset of pneumonia from multiple lung abscesses. He was afflicted also with pernicious anemia. Type specific antipneumococcus rabbit serum was used in three cases in addition to the sulfathiazole. Of these three patients, one had a type I bacteremia and pneumonia and in addition severe diabetic acidosis and a furuncle. His temperature failed to decrease below 101 F. after twenty-four hours of sulfathiazole therapy, although bacteremia was no longer present. He therefore was given 100,000 units of type I antipneumococcus serum, which was followed by a prompt fall in temperature. Subsequently empyema due to type I pneumococci developed and was successfully drained. The second patient receiving serum had a type III pneumonia and a moderate degree of icterus. She responded poorly to sulfathiazole so 200,000 units of specific antipneumococcus serum was given. Following this the patient

22. Finland, Max; Brown, J. W., and Raugh, A. E.: Treatment of Pneumococcal Meningitis, *New England J. Med.* 218: 1033 (June 23) 1938.

23. The determinations were performed under the direction of Dr. G. T. Evans, director of laboratory service, University of Minnesota Hospitals.
24. Marshall, E. K., Jr., and Litchfield, J. T., Jr.: Determination of Sulfanilamide, *Science* 88: 85 (July 22) 1938.

slowly improved, but at the time she left the hospital several weeks later she had residual lung abscesses. The third patient had a type V pneumonia and was in the last trimester of pregnancy. Her temperature failed to decrease after adequate doses of sulfathiazole, so she was given 53,000 units of specific antipneumococcus rabbit serum. Shortly thereafter her temperature became normal.

The effect of sulfathiazole on the clinical course of pneumonia was less dramatic than that which we have experienced with the use of sulfapyridine. The temperature curves showed a slower and more gradual approach to normal following the administration of sulfathiazole. Although the number of cases that we have presented is small, the end results with sulfathiazole compare very favorably with sulfapyridine, and the patients as a whole tolerated the former drug much better. Toxic manifestations were less frequently encountered in this group of patients than in a comparable group treated with sulfapyridine. Vomiting occurred in only one instance. The drug had to be discontinued in one case because of the appearance of an erythema nodosum-like cutaneous lesion with drug fever on the ninth day of treatment. It is of interest that one patient who had received sulfapyridine five months previously for pneumonia had at that time an extensive dermatitis. When this patient was given sulfathiazole a papular eruption appeared on her arms shortly after therapy was instituted, but this medication was continued for several more days with no untoward reactions.

POSTOPERATIVE PNEUMONIA

Of the twenty-two patients having postoperative pneumonia treated with sulfathiazole, twelve were given the sodium salt intravenously. None of the patients had a bacteremia due to the pneumococcus; however, *Escherichia coli* was demonstrated in the blood of one patient. Although two of the patients died, death was attributable to causes other than the pneumonia. The toxic manifestations following the use of the sodium salt of sulfathiazole were minimal, although one patient had a gross hematuria with no other evidence of kidney dysfunction. A further discussion of sulfathiazole in the treatment of postoperative pneumonia will be presented elsewhere.

PNEUMOCOCCIC MENINGITIS

Three patients with pneumococcic meningitis were treated with sulfathiazole and specific antipneumococcus rabbit serum. Because there are no reports available in the literature concerning the value of sulfathiazole in the therapy of pneumococcic meningitis, the course of events in the illness of each of these patients is presented:

CASE 1.—M. S., a housewife aged 39, entered the service of Dr. Horace Newhart of the University Hospitals on March 4, 1940, in a comatose condition. Ten days before, an infection of the upper respiratory tract had developed, followed by a bilateral earache, headache, stiff neck, nausea and vomiting, and finally coma. The left ear drum was injected and there was tenderness over the right mastoid area. The neck was held in rigid hyperextension; Kernig's and Brudzinski's signs were positive. Lumbar puncture showed the spinal fluid to have a pressure of 18 mm. of mercury; 600 cells were present with 94 per cent polymorphonuclear leukocytes and 4 per cent monocytes; sugar was less than 15 mg. per hundred cubic centimeters; protein 1.2 Gm. per hundred cubic centimeters. Type III pneumococci were isolated from cultures of the spinal fluid, blood and exudate of both ears.

Shortly after admission the patient was given 175,000 units of type III antipneumococcus rabbit serum intravenously. This was followed by a lumbar puncture, drainage of the fluid and the intrathecal introduction of specific type III pneumococcus antibody and fresh human serum. Thereafter daily drainage of spinal fluid was carried out and the fluid replaced with human serum and type III antipneumococcus rabbit serum. Sulfathiazole was administered orally through a nasal tube, and on two occasions she was given the sodium salt of sulfathiazole intravenously. The course of the patient's illness is depicted in chart 1. The blood concentration of sulfathiazole was maintained at high levels throughout her illness. After the first day, repeated cultures of the spinal fluid and blood remained sterile. However, her condition became worse on the fifth day, when she had marked abdominal distention and severe diarrhea. She became cyanotic, the Cheyne-Stokes type of respiration developed and she died March 13. At necropsy there was little involvement of the meninges. Death was attributed to an extensive and severe peritonitis.

The following case is of exceptional interest because on two different occasions the patient entered the hospital suffering from meningitis. The first attack was due to a beta hemolytic streptococcus and the second to a type III pneumococcus. The patient recovered completely from both infections.

CASE 2.—W. V., a boy aged 6 years, was first seen in the University Hospitals on Dec. 23, 1938. About ten days before

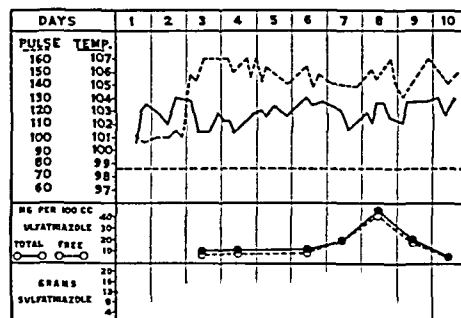


Chart 1 (case 1).—Type III pneumococcus meningitis unsuccessfully treated with sulfathiazole.

he had complained of a bilateral earache, following which the ears began to drain. Subsequently fever, projectile vomiting and a stiff neck developed and he appeared dehydrated and irrational. The tympanum of each ear was thickened, but no exudate was seen. The neck was rigid, the thighs were held in flexion, and Kernig's and Brudzinski's signs were present.

Bilateral myringotomy revealed no exudate. An x-ray film of the left mastoid area showed evidence of an acute inflammatory process. Cultures of venous blood remained sterile. Examination of the spinal fluid showed it to be under increased pressure. There were 5,300 cells with 69 per cent polymorphonuclear leukocytes and 31 per cent monocytes. A pure culture of beta hemolytic streptococci was isolated from the fluid. The protein level was 171 mg. per hundred cubic centimeters. The course of his illness is illustrated in chart 2. Following the administration of the sulfanilamide the spinal fluid cultures remained sterile and he progressively improved. He left the hospital Jan. 17, 1939.

He entered the University Hospitals the second time on March 1, 1940. He had been in good health since his previous discharge from the hospital until ten days before the present entry, when he contracted an infection of the upper respiratory tract. This was followed by pain in the left ear, headache, nausea and vomiting, and stupor. On examination the patient was stuporous and had a left facial paralysis. The ears showed slight, purulent discharge from the left and edema of the tympanum on the right. His neck was rigid; the reflexes of the extremities were hyperactive; Kernig's sign was present. Lumbar puncture yielded spinal fluid that was slightly cloudy. There

were 7,200 leukocytes, of which 58 per cent were polymorphonuclear neutrophils and 42 per cent monocytes. There were 221 mg. of protein per hundred cubic centimeters. Type III pneumococci were isolated from the spinal fluid and the blood stream. He was given an initial dose of the sodium salt of sulfathiazole intravenously and then the drug was administered orally. Following this, 136,000 units of type III antipneumococcus rabbit serum

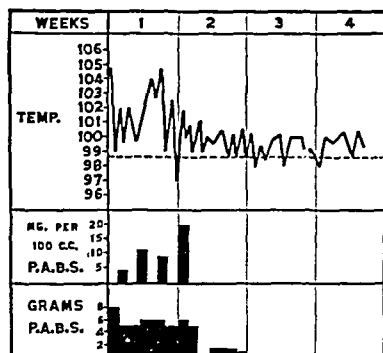


Chart 2 (case 2).—Beta hemolytic streptococcus meningitis successfully treated with sulfanilamide.

clinical course of this patient. It is important to note the low levels of sulfathiazole in the spinal fluid as compared to the concentrations in the blood. The patient left the hospital March 28 in good condition and has remained well.

CASE 3.—I. M., a girl aged 1 year, who entered the University Hospitals on April 1, 1940, had had an injection of the upper respiratory tract six weeks prior to this, complicated by a bilateral otitis media. Five days before entry her left eye became swollen and reddened. Generalized convulsions were observed. Her ears began to drain spontaneously. She was febrile and her condition became progressively worse. Sulfanilamide had been given without any improvement. On physical examination the child appeared acutely ill. A right-sided facial paralysis and a ptosis and discoloration of the left eye were observed. The tympanum of each ear was inflamed. The neck was held in rigid extension. Respiration was of the Cheyne-Stokes type. The reflexes of the extremities were all increased and Kernig's sign was present. Type XVIII pneumococci were cultured from both the blood and the spinal fluid. The spinal fluid had a ground glass appearance and was under a pressure of 40 mm. of mercury. Examination revealed only 9 monocytes, protein was 162 mg. per hundred cubic centimeters and sugar was less than 15 mg. per hundred cubic centimeters. Sulfathiazole was administered intravenously and then orally through a nasal tube. A total of 40,000 units of type XVIII antipneumococcus rabbit serum was given intramuscularly and intravenously. Specific serum and human complement were administered intrathecally. Subsequent blood cultures remained sterile, but type XVIII pneumococci were constantly recovered from the spinal fluid. Failure to sterilize the spinal fluid may be explained partly on the basis that at times there was evidence of a partial block of the spinal canal. It is of interest that the levels of free sulfathiazole in the blood were 7.8, 8.9, 4.3, 7.5, 19.9 and 1.2 mg. per hundred cubic centimeters, while simultaneously the concentrations in the spinal fluid were 4.4, 5.4, 1.8, 2.7, 2.1 and 2.7 mg. per hundred cubic centimeters. The patient's condition became progressively worse and she died April 20. Postmortem examination revealed evidence of an extensive basilar meningitis and pneumonia.

MISCELLANEOUS PNEUMOCOCCIC INFECTIONS

The following case is of interest because of the unusual nature of the disease process and the successful use of sulfathiazole in the presence of acute glomerular nephritis:

CASE 4.—G. S., a boy aged 12 years, contracted right otitis media three weeks before entry to the hospital. He had fever and swelling of the tissue over the right mastoid area. Two

weeks after the onset of his illness there appeared a generalized edema of the face and extremities, accompanied by vomiting. The night before entry there occurred a sudden onset of severe dyspnea. When first seen in the hospital, he was cyanotic, irrational and extremely dyspneic. His temperature was 106 F. There were loud bubbling moist rales throughout both lung fields. The heart was enlarged to the left on percussion. The rate was 160 per minute with a gallop rhythm. The blood pressure was 120 mm. of mercury systolic and 90 mm. diastolic. The external jugular veins were engorged and pulsating. The abdomen was distended and the liver enlarged. Urinalysis showed a large trace of albumin, and the sediment contained numerous granular and hyaline casts, erythrocytes and leukocytes. The blood urea nitrogen was 29.3 mg. per hundred cubic centimeters. Type XII pneumococci were isolated from the blood. X-ray films of the chest revealed marked pulmonary edema and generalized enlargement of the heart. It was apparent that the patient had pneumococcal bacteremia probably originating from the otitis media, acute glomerular nephritis with nitrogen retention, and acute cardiac failure with pulmonary edema. Shortly after admission a venesection was performed and 450 cc. of blood was withdrawn. Then 50 cc. of a 50 per cent solution of sorbitol with 0.24 Gm. of aminophylline was given intravenously, following which considerable improvement was noted. Because of the pneumococcal bacteremia, 4 Gm. of the sodium salt of sulfathiazole was given intravenously and eight hours later 2 Gm., a similar dose being repeated in another eight hours. His temperature dropped from 106 F. to normal within twenty-four hours and remained there. Blood cultures remained sterile. He continued to receive sulfathiazole orally after the foregoing intravenous therapy for seven days. His improvement continued and he left the hospital May 6, 1940. When seen one month later he was in good health with no residual evidence of his having had nephritis.

Another unusual pneumococcal infection which was treated is reported in case 5:

CASE 5.—A boy aged 7 years fell and received a compound fracture of the ulna and radius of the left arm twelve days before admission to the hospital. The tissue overlying the fracture site became infected and 150 cc. of purulent material was aspirated from a localized abscess. This contained a pure culture of type V pneumococci. Blood cultures were sterile. Pneumococci were not isolated from cultures of material taken from the nose and throat. The arm was immobilized and the area treated with hot packs. At the same time sulfathiazole

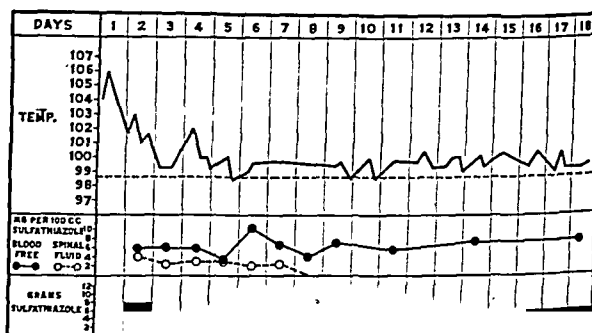


Chart 3 (case 2).—Type III pneumococcus meningitis successfully treated with sulfathiazole and type III antipneumococcus rabbit serum.

was administered orally for five days. Coincident with this therapy, the infection subsided and on x-ray examination four weeks later callus formation was abundant. His general condition was good, and there was normal function of the hand when the patient was seen six weeks later.

STAPHYLOCOCCIC SEPSIS

In the group of thirty-six patients who had staphylococcal sepsis there were twenty-two having localized lesions without demonstrable invasion of the blood stream by organisms. The lesions included postopera-

tive wound infections, otitis media and mastoiditis, empyema, suppurative arthritis, carbuncles, decubitus ulcers, osteomyelitis and subcutaneous abscesses but did not include any infections of the urinary tract. In treating these patients we were fully aware of the inhibitory effect of bacteria, leukocytes and necrotic material on the bacteriostatic action of sulfathiazole. Our object in treating them was not directed primarily at the abscessed tissue but at preventing spread of the infection to healthy tissue and possible invasion of the blood stream. Two methods of therapy with sulfathiazole were employed: One was to administer the drug orally, endeavoring to maintain a constant concentration of 5 mg. per hundred cubic centimeters of free sulfathiazole in the blood. This therapy was continued for only a few days in some cases and for several weeks in others. The second method was to apply sulfathiazole locally to the diseased tissue. For this purpose we used pure sulfathiazole crystals and sprinkled them into the wound; or the crystals were suspended in sterile distilled water, cod liver oil or physiologic solution of sodium chloride and the suspension then introduced into the infected area. The oral administration of sulfathiazole often was combined with the topical application of the chemical. One of us (W. W. S.) carried out this phase of our sulfathiazole studies with Dr. John R. Paine of the department of surgery, and a more complete report is forthcoming concerning the methods and results. In brief, the topical application of sulfathiazole entails adequate drainage and immobilization of the infected area, frequent irrigations with mild antiseptic solutions to eradicate purulent and sloughing material, saturation of the wound with sulfathiazole, and, in some instances, the administration of sulfathiazole orally. In the majority of cases treated in this manner but little of the sulfathiazole appeared in the circulating blood. The results have been highly satisfactory and merit further investigation.

Our most satisfactory clinical results with sulfathiazole occurred in the group of fifteen patients with staphylococcic septicemia. All these patients recovered. One patient died subsequently from leukemia. Since we have treated a comparable number of patients having staphylococcic septicemia with sulfapyridine, a detailed report is in preparation describing our clinical experience with chemotherapy in this type of infection. So far as the use of sulfathiazole is concerned, the drug was administered orally, when possible, so that a concentration of from 4 to 5 mg. of free sulfathiazole was maintained in the blood. It is doubtful whether higher levels are necessary. It should be emphasized that in conjunction with the exhibition of sulfathiazole it is imperative that adequate drainage of the focus or foci be carried out promptly. The length of time sulfathiazole therapy should be continued is dependent on the individual case. It is our belief at the present writing that sulfathiazole is the most effective therapeutic agent in the treatment of staphylococcic septicemia.

INFECTIONS OF THE URINARY TRACT

A majority of the twenty patients who had urinary infections were treated in cooperation with Dr. C. D. Creevy. The drug was given a severe therapeutic test in some of these instances. Many of the patients had been treated unsuccessfully with other therapeutic agents, including sulfanilamide and sulfapyridine. Furthermore, some of the patients had partial obstruction of the urinary tract. The offending organisms included

alpha hemolytic streptococcus (faecalis and viridans), Staphylococcus albus and aureus, Bacillus proteus and Escherichia coli. Dr. Creevy informed us that in his experience infections of the urinary tract due to Bacillus proteus were most resistant to all forms of therapy. The dose of sulfathiazole used in these cases was 1 Gm. from four to six times a day for from seven to ten days. Definite clinical improvement was obtained in thirteen of the twenty cases. It may be of significance that the highest incidence of toxic reactions from sulfathiazole was in this group of patients with infections of the urinary tract. It would appear from our experience with this group that sulfathiazole may have a definite place in the therapy of infections of the urinary tract, particularly infections due to staphylococci, alpha hemolytic streptococci, Bacillus proteus and, in some instances, Escherichia coli.

MISCELLANEOUS INFECTIONS

Table 1 lists the nature of the miscellaneous infections treated. No clinical improvement was obtained by two patients with subacute bacterial endocarditis due to

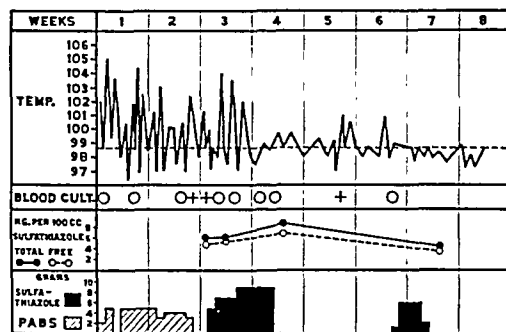


Chart 4.—Recovery of a man aged 55 from septicemia due to alpha hemolytic streptococci (*Streptococcus viridans*) following administration of sulfathiazole.

Streptococcus viridans. The blood stream of two patients was cleared of *Escherichia coli* following the use of sulfathiazole. In one the primary focus was in the urinary tract, and in the second the bacteremia followed an enterostomy performed because of an acute intestinal obstruction. Although only four patients having gonococcic arthritis were treated with sulfathiazole, the clinical results were less satisfactory than those obtained with equivalent doses of sulfanilamide and sulfapyridine. In two of these four cases there was some clinical improvement following adequate doses of sulfathiazole, but the improvement was more marked when sulfanilamide was given subsequently. One elderly patient with a severe infection due to beta hemolytic streptococci did not respond to sulfathiazole therapy. A patient with septicemia due to alpha hemolytic streptococci (*Streptococcus viridans*) was of particular interest. He had had daily chills and fever for three weeks, and streptococci had been isolated from his blood on three occasions. At one time there were 167 colonies per cubic centimeter of blood. It was the consensus of the consulting staff that the primary focus was in the biliary tract. Sulfanilamide was given with but little clinical improvement. Sulfathiazole was then administered, following which the patient's temperature approached normal and blood cultures became sterile. When the sulfathiazole was discontinued he again had fever, and streptococci were recovered from the blood stream. After resumption of sulfathiazole therapy, his

fever subsided and blood cultures again became sterile. He improved rapidly and has been in good health ever since. The clinical course in this case is illustrated in chart 4.

ABSORPTION, EXCRETION AND CONJUGATION

From the observations made in these studies, we are able to conclude that sulfathiazole was absorbed less readily than sulfanilamide and more readily than sulfapyridine. When patients were given sulfanilamide orally in divided doses, it was observed that higher concentrations could be obtained and maintained in the blood than could concentrations of sulfathiazole when the same patients were given sulfathiazole at another period. It should be pointed out, however, that this difference is more apparent than real, since sulfathiazole is excreted more rapidly than sulfanilamide. In other words, sulfathiazole may be absorbed to the same extent as sulfanilamide, but there might be some difficulty in maintaining equivalent concentrations in the blood because of this difference in excretion. Sulfathiazole was eliminated from the body much more rapidly than either sulfanilamide or sulfapyridine, and practically all of the drug that was absorbed could be recovered quantitatively in the urine. We have noted

TABLE 3.—Toxic Manifestations Encountered in Group of One Hundred Patients Treated with Sulfathiazole

Manifestation	No. of Patients
Dermatitis	9
Nausea and vomiting	6
Nitrogen retention and oliguria.....	1
Gross hematuria	1
Drug fever	2
Burning and itching of the eyes.....	2
Injection of conjunctivas	1
Anemia	1

in some cases that, following the oral administration of sulfathiazole, the urine appeared quite cloudy, and a white sediment formed when the urine was allowed to stand at room temperature for several hours. This sediment consisted almost entirely of sulfathiazole crystals. It was observed that when a single dose of sodium sulfathiazole was given to a patient intravenously a large amount of the drug was excreted within fifteen hours. An analysis of several hundred determinations of the concentration of the free and conjugated forms of sulfathiazole in the blood of patients permits us to conclude that the average amount of conjugated sulfathiazole is about 20 per cent. In two cases 50 per cent of the drug was present as the conjugated form. It is difficult to evaluate the amount of drug that a given patient will conjugate when the single dose method is used, since we have observed that the degree of conjugation varies when several doses are given over a period of several hours or days. The degree of conjugation is somewhat greater than that which is encountered following the administration of sulfanilamide; on the other hand, it is definitely less than the amount of sulfapyridine that is usually conjugated.

TOXICITY

The toxic manifestations from sulfathiazole are based on observations made on 100 patients (table 3). The most common evidence of toxicity was a cutaneous eruption, which usually appeared after the drug had been given for several days. It was a maculopapular type

of eruption, most prominent over the extremities. In four of the cases the lesion simulated erythema nodosum very closely. In one of these drug therapy was discontinued and the lesion disappeared. After a lapse of several days the same doses of sulfathiazole were given without any further cutaneous eruption.

Nausea and vomiting occurred in six cases, but in only one was it severe enough to warrant discontinuing further administration of the drug. The degree and incidence of this complication were definitely less than with sulfapyridine therapy. Sodium sulfathiazole has been given intravenously in thirteen cases without producing any evidence of nausea or vomiting.

One patient suffered from oliguria and nitrogen retention after receiving 27 Gm. of sulfathiazole by mouth in five and one-half days. He recovered completely. Gross hematuria was encountered once following the intravenous administration of sodium sulfathiazole. This patient had no other evidence of kidney dysfunction.

Two patients complained of burning and itching of the eyes while receiving sulfathiazole. This promptly subsided when therapy was stopped. One other patient had a marked injection of the conjunctiva of one eye with a slight amount of purulent discharge while receiving the drug.

Anemia of a moderate degree was noted in only one instance. In no instance was there a depression of the leukocytes or granulocytes that could be attributed solely to the drug.

SUMMARY

In the course of these studies on 128 subjects suffering from a variety of infections we have endeavored to compare sulfathiazole with sulfanilamide and sulfapyridine as regards its pharmacology, toxicology and therapeutic effectiveness. Comment has already been made on its absorption and excretion. Of considerable importance is the question of toxicity. Thus far, in our experience, sulfathiazole appears to be no more toxic than either sulfanilamide or sulfapyridine. In fact, the troublesome nausea and vomiting that not infrequently follow the administration of sulfapyridine are not so commonly encountered when sulfathiazole is used. The incidence of dermatitis, however, is greater following the use of sulfathiazole than either sulfanilamide or sulfapyridine. As regards the therapeutic phase of the study, it appears that sulfathiazole has the same value as sulfapyridine in the treatment of pneumococcal pneumonia. Sulfapyridine seems to cause a more abrupt fall in temperature than sulfathiazole; however, there is some evidence that sulfapyridine may have a nonspecific antipyretic effect. When sulfapyridine was given to febrile patients who had fever not due to an infectious agent a prompt decrease in the temperature was noted, which in turn was followed by a rise when the drug was omitted. This was especially true in a case of lymphatic leukemia in which there was no evidence of an infection. Whether or not sulfathiazole is as valuable as sulfapyridine in the therapy of pneumococcal meningitis is dependent on further investigation, as is also the topical application of sulfathiazole for localized staphylococcal lesions. However, there is no doubt that sulfathiazole is more effective than sulfapyridine in the treatment of staphylococcal septicemia and appears to be the best therapeutic agent available for this infection at the present time. Sulfathiazole appears to be of especial value in the treatment of infections of the urinary tract

due to *Bacillus proteus*, alpha hemolytic streptococci, *Escherichia coli* and staphylococci. Its exhibition may result in sterile cultures of urine when sulfanilamide therapy has been ineffective.

CONCLUSIONS

1. In thirty-three cases of pneumococcic pneumonia, sulfathiazole appeared to be fully as effective a therapeutic agent as sulfapyridine.

2. Recovery of one of the three patients having pneumococcic meningitis occurred following administration of sulfathiazole and type specific serum.

3. Fifteen consecutive patients with staphylococcic septicemia were successfully treated with sulfathiazole. (One patient died subsequently of leukemia.)

4. The results of the use of sulfathiazole in the treatment of twenty cases of infection of the urinary tract, many of which had been refractory, suggested that this drug may be a useful adjunct in the therapy of infections of the urinary tract, particularly those due to staphylococci, *Bacillus proteus*, alpha hemolytic streptococci and *Escherichia coli*.

5. Sulfathiazole was readily absorbed and quickly excreted in the urine, while the degree of conjugation was less than that occurring with sulfapyridine.

6. Less nausea and vomiting accompanied the use of sulfathiazole when compared with sulfapyridine; however, dermatitis was more frequently encountered with sulfathiazole than with either sulfanilamide or sulfapyridine.

Clinical Notes, Suggestions and New Instruments

LOCAL ANAPHYLACTIC (ARTHUS?) PHENOMENA FROM PARENTERAL INJECTIONS OF HISTAMINASE

SIGMUND S. GREENBAUM, M.D., PHILADELPHIA

Typical examples of local anaphylaxis are rarely observed in human beings.¹ Although reported in connection with injections of vaccines (rabies, typhoid), antitoxin and toxin-antitoxin, this is the first report of a local anaphylactic reaction developing after injections of histaminase.²

Local anaphylaxis (the Arthus phenomenon) is the "inflammatory reaction which occurs when an animal immunized against a protein is reinjected with the same antigen—it is caused by the presence of an antibody in the blood stream and tissues of the immunized animal and occurs when antigen and antibody meet in tissues" (Opie). It is by most sharply differentiated from the Schwartzman phenomenon. It is possible for such antibodies to be present only in the tissues, i.e. tissue sensitization without the presence of antibodies in the blood stream. It is perhaps on this basis that the passive transfer test performed with the serum obtained from my first patient was negative—in fact the control showed more definite erythema than the presumably sensitized site of injection of the histaminase.

The time interval in case 1 (approximately twenty-eight days) between the first and second injection was of interest and may account for the more marked local reaction than that occurring in case 2.

At the present writing, eight other patients within the past six weeks have received at intervals of three or four days injections of histaminase without untoward reactions of any significance.

1. Vaughan, W. T.: Practice of Allergy, St. Louis, C. V. Mosby Company, 1939, p. 793.

2. The histaminase used was the product of the Winthrop Chemical Company: T 360. The ampule contains 2 units of histamine hydrochloride detoxifying units in the form of a dry sterile powder (renal and pig mucosal tissue), which for injection purposes is suspended in about 2 cc. of sterile physiologic solution of sodium chloride.

REPORT OF CASES

CASE 1.—A. L., a housewife aged 39 with acne vulgaris, was given into the left arm over the deltoid region on Feb. 19, 1940, a subcutaneous injection of histaminase. The day after this injection the patient left, unexpectedly, for Florida and did not return to the office until March 18, at which time she received another injection—the same dose of histaminase but in the subcutaneous tissue over the right deltoid. Within eight hours the arm became swollen from the shoulder to the elbow and there was some limitation in the movement of the right elbow. There was no elevation of temperature and the patient felt well except for a sense of tenseness due to the marked edema in the right arm. The next morning the arm was markedly swollen and the skin tense and hot over the area indicated. There was moderate tenderness and slight pain. There was no fever and no axillary adenitis. On the inner surface of the arm was an area of erythema the size of the palm of a hand but the remainder of the skin over the swollen arm showed only the changes incident to the tense, nonfluctuating subcutaneous edema. The patient was advised to use compresses of hot magnesium sulfate (a tablespoon to a quart of water) continuously. On the morning of the 20th she was seen again. The temperature the evening before had gone to 99 F. but on this morning was normal. A portion of the erythematous area the size of a silver dollar (38 mm.) had undergone wheal formation (at which site there was moderate pruritus) the night before but was now gone. A localized area of urticaria had actually developed. The swelling was moderately but definitely less, but the entire arm now itched and she was advised to continue the hot applications of magnesium sulfate. By the morning of March 22 the edema had disappeared to a marked degree. There was a mild, slightly tender axillary adenitis. There was some induration at the site of the injection. One week later I removed 10 cc. of blood and the next day started, with the serum, a passive transfer test. One tenth cc. of the serum was injected intracutaneously into the flexor skin of the left forearm; four days later a slightly smaller amount of histaminase solution was injected at the site of the serum injection and a control injection given into the flexor skin of the right arm. No reaction occurred although the patient was observed for one week.

CASE 2.—M. E., a nurse aged 35 with a deep form of acne vulgaris, was given an injection, March 15, 1940, subcutaneously into the left thigh. Four days later she received a second injection, the same dose, subcutaneously into the right thigh. Seen three days later the patient stated that swelling had developed at the site of the second injection twenty-four hours after it had been given. When I saw her the skin over the injected area had assumed an erythematous-urticarial appearance. The erythematous patch was an area 8 by 15 cm. and pruritic; twenty-four hours later the redness was gone, as was the swelling, but moderate pigmentation was present. On March 24 the patient was seen again and given one half the dose (i. e. one detoxifying unit) subcutaneously into the left thigh well above the site of the first injection. That night some redness developed over the injected area and from 2:30 to 6 a. m. severe abdominal cramps, nausea and diarrhea developed. She was so weakened that she remained in bed the entire following day. The patient, a dietitian at the hospital, did not attribute her gastrointestinal upset to any food she had eaten as the same food had been served to about 200 other hospital employees and nurses without any of them having any ill effects. March 29 the patient was given a fourth injection of 0.5 cc. of the solution (i. e. one fourth the dose). There was no untoward reaction. April 2, she was injected with one half the dose, and four days later, since there had been no reaction, a full dose was given and was well tolerated.

COMMENT

An interesting point in both cases is that the histaminase itself set up, albeit only locally, an urticarial type of reaction. Histaminase has been advised as a beneficial agent in urticaria. Can a substance producing an urticarial reaction be of value in the treatment of a similar objective symptom which has so many known causes or is one to believe in *similia similibus curantur*?

320 South Eighteenth Street.

Special Article**THE PHARMACOPEIA AND THE
PHYSICIAN****THE DRUG THERAPY OF CARDIAC
ARRHYTHMIAS**

ROBERT L. LEVY, M.D.

NEW YORK

This is one of the second series of articles written by eminent authorities for the purpose of extending information concerning the official medicines. The twenty-four articles in this series have been planned and developed through the cooperation of the U. S. Pharmacopeial Committee of Revision and THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.—Ed.

Irregularity of the heart beat is observed usually in association with organic cardiac disease but occurs not infrequently as a functional disturbance in the absence of structural lesions. It is due either to faulty initiation of the cardiac impulse or to its defective conduction through the heart. The arrhythmia may be transient or permanent. Effective treatment depends primarily on recognition of the cause. Drug therapy often brings about marked clinical improvement and, on occasion, may save life.

The use of medicinal remedies is not indicated in every disorder of rhythm or under all circumstances. For example, sinus irregularity, often marked in children, is of no pathologic significance. Premature contractions due to tobacco disappear when smoking is stopped. Auricular fibrillation, occurring in the course of hyperthyroidism, may terminate spontaneously after subtotal thyroidectomy. Five of the more important arrhythmias have been chosen for consideration because in each, as a rule, appropriate treatment with drugs is beneficial.

PREMATURE CONTRACTIONS

Many patients experience no discomfort from premature beats and are unaware of their occurrence. Others complain of palpitation or, more rarely, of precordial pain. This arrhythmia has been observed over a period of many years in persons in whom symptoms or signs of organic heart disease have not developed. The ectopic focus may be situated in auricles, junctional tissues or ventricles. Localization of the point of origin, possible only with the aid of the electrocardiograph, is immaterial for purposes of therapy. But an etiologic diagnosis is essential.

If the heart muscle is irritated by a toxic agent it is necessary only to eliminate the cause. The use of coffee, tea or tobacco can be discontinued. If the gallbladder is infected, its surgical removal is indicated. Recovery from nervous fatigue is aided by a respite from customary activities. Any drug, particularly digitalis, must be stopped if it is poisoning the myocardium.

Premature beats associated with emotional disturbances may disappear as the result of psychotherapy. A mild sedative is often helpful, such as one of the bromide salts, from 0.6 to 1 Gm. (10 to 15 grains), dissolved in a suitable vehicle and taken three or four times a day. Phenobarbital, from 0.015 to 0.03 Gm. (one-fourth to one-half grain) in tablet form, serves the same purpose. Sedation is discontinued as improvement takes place.

One of the early signs of myocardial insufficiency is the occurrence of ventricular premature contractions. Taking digitalis usually causes the irregularity to disappear. This drug is best given by mouth, as the whole leaf, dispensed in the form of tablets, pills or capsules. One digitalis unit¹ (approximately 0.1 Gm., or 1½ grains) of a biologically standardized product (such as digitalis pulverata, U. S. P.) is administered three times a day for four days, twice a day for three days and then once a day for a week. The required daily dosage and total amount will vary with each patient; the scheme outlined serves only as a guide. Full digitalis action, as required in the presence of advanced congestive failure, is not necessary. The drug may be stopped when regular rhythm has been established. Sometimes a continued maintenance ration is necessary to prevent relapse (from 0.05 to 0.2 Gm., or three-fourths grain to 3 grains daily). It must be kept in mind not only that digitalis will abolish premature beats but that this arrhythmia is one of the early signs of poisoning by the foxglove.

In cases of coronary atherosclerosis in which there is no evidence of cardiac insufficiency, areas of local myocardial ischemia not infrequently appear to initiate this type of irregularity. Digitalis is the most useful drug in abolishing it and is given as described for the treatment of early congestive heart failure.

Should digitalis be poorly tolerated, as happens on rare occasions, squill may be substituted in the form of the product marketed under the name "urginin." This preparation, composed of equal parts of two water-insoluble glucosides (scillonin A and B), has an action on the heart like that of digitalis. One 0.5 mg. ($\frac{3}{120}$ grain) tablet is the approximate equivalent in therapeutic activity in man of 0.1 Gm. (1 digitalis unit) of digitalis leaf. Uarginin is frequently well taken by those in whom digitalis causes local digestive discomfort, but it possesses no other advantages.

Quinidine sulfate is another drug that is occasionally useful, but less so than digitalis. The dose is 0.2 Gm. (3 grains) three or four times a day, in capsule or tablet form. Phenobarbital, from 0.015 to 0.03 Gm. (one-fourth to one-half grain), may sometimes be given with quinidine to advantage. In my experience quinine is less effective than quinidine, and its efficacy is not enhanced by combining it with strychnine, as has been recommended.

AURICULAR FIBRILLATION

Auricular fibrillation is due to the establishment in the auricles of a circus movement, which travels at a varying but rapid rate over an irregular course, about the mouths of the great veins. The ventricular rate in an untreated case is usually fast. There are two ends to be achieved by drug therapy: first, to slow the rate of beating of the ventricles; second, under certain conditions which will be defined, to restore sinus rhythm.

Regardless of etiology, the ventricular rate, if rapid, must be retarded. This is accomplished by administering digitalis, which is effective in either the presence or the absence of congestive failure. Its action in slowing the ventricles is more pronounced in rheumatic and coronary heart disease than in hyperthyroidism, or in cases associated with toxemia due to bacterial poisons. Digitalis acts by depressing the conductivity of the junctional tissues and producing incomplete auriculo-

From the Department of Medicine, Columbia University College of Physicians and Surgeons, and the Medical Clinic of the Presbyterian Hospital.

1. U. S. P. XI (1936) digitalis is from 25 to 30 per cent stronger than the digitalis of the U. S. P. X (1926). The U. S. P. XI digitalis unit is also somewhat stronger than the Hatcher-Brody cat unit.

ventricular block. As a result, only part of the impulses from the auricles are permitted to reach the ventricles. The degree of block, and hence the ventricular rate, can be regulated by the amount of the drug given.

The total therapeutic dose of digitalis will vary according to the degree of cardiac insufficiency and the susceptibility of the individual. The amount necessary to induce a full effect in a person who has not previously taken digitalis is between 1 and 2 Gm. (15 and 30 grains), given in the course of two or three days. Usually 1 Gm. can safely be given in the first twenty-four hours in divided doses. In the second twenty-four hours 0.5 Gm. ($7\frac{1}{2}$ grains) may be administered. A suitable interval between doses is from four to six hours; but the rate of digitalization can be varied according to the urgency of the indications. Subsequent therapy will depend on the effect observed on ventricular rate, the ultimate aim being to lower this to a level ranging between seventy and eighty beats a minute, with the subject at rest.

In fibrillation of recent onset, sinus rhythm may be resumed after digitalis has been taken, owing to improvement in the function of the myocardium. If fibrillation persists, a daily maintenance ration should be continued. The patient with permanent auricular fibrillation must, as a rule, take digitalis for the rest of his life. The daily dose may be as little as 0.05 Gm. or as much as 0.3 Gm. The average is 0.1 Gm. Each case is the subject of experiment in this respect, with the ventricular rate, at rest, serving as guide.

After surgical operation or in the presence of nausea and vomiting, digitalis may be given by rectum, as the tincture or in a suppository. Absorption is good. The dosage is similar to that used by mouth. Intramuscular injections may be employed when oral or rectal routes are not available.

In rare cases an immediate slowing of rate seems imperative. Under these conditions crystalline strophanthin (ouabain), injected intravenously, is the preparation of choice, because its known chemical composition makes accurate dosage possible. An initial effect is apparent in from five to twenty minutes and a maximal effect in from fifteen to fifty minutes. At the first dose 0.5 mg. ($\frac{1}{20}$ grain) is injected; this is followed at intervals of one hour or more by 0.1 or 0.2 mg., up to a total dose of 1 mg. Treatment is then continued by giving a preparation of digitalis by mouth, by rectum or by intramuscular injection.

The toxic effects of digitalis are now well known. Nausea, vomiting, diarrhea and the occurrence of premature contractions are among the earlier evidences of poisoning. With larger doses, ventricular tachycardia may appear. As soon as any one of these is noted, the drug should be discontinued.

Restoration of normal rhythm can be brought about, in certain cases, by the use of quinidine sulfate. The number of patients suitable for receiving this drug is not large because of the dangers from its administration and the limitations in its effectiveness. Some persons experience tinnitus, nausea, vomiting or diarrhea as minor discomforts. More serious toxic effects are syncope, collapse, embolism, induction of cardiac insufficiency, ventricular tachycardia and, on rare occasions, sudden death. By careful selection of suitable cases the chance of success in altering the rhythm is increased and the possibility of grave accident is minimized.

Contraindications to the employment of quinidine are idiosyncrasy to cinchona derivatives, fibrillation of long standing, significant cardiac enlargement, mitral

stenosis, active carditis, congestive heart failure, previous occurrence of emboli to lungs or systemic arteries, partial or complete heart block, bundle branch block and hyperthyroidism. Favoring its use are a competent myocardium, fibrillation of recent onset, little or no cardiac enlargement, no structural valvular defect and fibrillation persisting after subtotal thyroidectomy for hyperthyroidism. It is clear that quinidine is a drug which is to be given to a small group of patients.

Resumption of normal rhythm does not greatly improve the clinical status of most patients with organic heart disease and fibrillation of long standing (longer than six months). There is always the possibility, and indeed the probability, that fibrillation will recur, with sudden onset of a rapid ventricular rate. Another period of rest and therapy is then required. On the other hand, if the functional capacity of the heart muscle is good and the ventricular rate is held at a proper level by continued digitalis dosage, a more stable condition is maintained. Though the auricles continue to fibrillate, the patient can pursue his prescribed activity with comfort and freedom from upsetting episodes.

Cardiac insufficiency, when present, should be treated by suitable measures before quinidine is given. The ventricular rate, if rapid, is controlled by digitalis. But before quinidine is started it is well to stop the administration of digitalis, because its action favors persistence of the circus movement. Quinidine therapy should be carried out with the patient in bed under careful observation, preferably with electrocardiographic control. It is not a procedure applicable to ambulatory patients.

Several plans for dosage have been suggested and found satisfactory. One that can be recommended is as follows: Individual doses are given by mouth, in the form of capsules or tablets, at intervals of two hours. First day, two doses of 0.2 Gm. (3 grains) each; these are to test for possible idiosyncrasy to the drug. If symptoms of cinchonism appear, treatment is abandoned. Occasionally normal rhythm follows administration of such small preliminary doses. Second day, three doses of 0.4 Gm. (6 grains) each. Third day, four doses of 0.4 Gm. each. Fourth and succeeding days, five doses of 0.4 Gm. each. In a few cases from six to eight doses in a day have succeeded where five have failed, but the larger amounts are not without added risk. The treatment may be continued for a week; but usually, if success is obtainable, from four to six days of this dosage suffices. If it should prove necessary to continue beyond this period, normal rhythm, though sometimes restored, rarely persists for long. Intravenous injection of quinidine is inadvisable; several fatalities have followed this procedure.

After resumption of normal rhythm it is desirable to continue with small doses of 0.2 Gm. three times a day for several weeks. These aid in preventing relapse. Such amounts, or even larger doses (0.4 Gm. three or four times a day) may be taken for weeks or months without harm or discomfort. A similar plan may be followed, often with good results, in cases of paroxysmal fibrillation, to prevent the occurrence of attacks. If, however, these recur at frequent intervals, fibrillation is allowed to persist, and the ventricular rate is controlled by digitalis.

AURICULAR FLUTTER

As in fibrillation, the mechanism at the basis of flutter is a circus wave in the auricles. In flutter, however, the circus wave follows a fixed path at a constant rate.

Its speed determines the rate of auricular contraction, which ranges in different cases from 200 to 400 a minute. Depending on the degree of auriculoventricular block, the rate of the ventricles is rapid or slow.

If the ventricular rate is fast, digitalis is indicated and is the drug of choice. It is given in the same manner as that outlined for fibrillation. Following full dosage, the rhythm is usually converted into fibrillation. When this occurs, and if the ventricular rate is slow, digitalis is stopped. After the lapse of several hours, normal rhythm may be resumed without further medication. If, in spite of apparent digitalis action, the mechanism of flutter persists, quinidine may be tried. The plan of dosage is the same as that given for fibrillation. But, if the foxglove has failed, quinidine is rarely effective. Should flutter be converted to fibrillation and the latter continue, quinidine may be expected to restore normal rhythm. Paroxysmal flutter is much less common than paroxysmal fibrillation. The prophylactic use of small doses of digitalis or quinidine may be tried if attacks are sufficiently frequent to cause discomfort.

Occasionally auricular flutter is resistant to all drug therapy and the disordered mechanism persists. If the ventricular rate is controlled by digitalis and the myocardium is competent, patients can carry on their customary activities without discomfort. In several reported cases normal rhythm has been resumed spontaneously, for no apparent reason, after flutter had been present continuously for months or even years.

PAROXYSMAL TACHYCARDIA

Paroxysmal tachycardia is observed frequently, though not invariably, when there are no anatomic lesions in the heart. It is due to a rapid succession of ectopic beats arising in auricles, junctional tissues or ventricles, occurring regularly at rates ranging from 150 to 200. The onset and offset are sudden, and the patient is usually aware of both. The duration of a paroxysm is from a few hours to a number of days; spontaneous cessation is the rule. Prolonged tachycardia may result in cardiac insufficiency, especially when there is impairment of the myocardium due to disease.

The effectiveness of any particular form of therapy cannot be foretold; each case appears to vary in its response. The attacks may be short and require no treatment by drugs. Simple mechanical procedures to terminate them should first be tried, such as carotid or ocular pressure, forced breathing, leaning forward in a chair with the head low or forced breathing with the glottis closed. If tachycardia persists and the patient is distressed, a triple bromide tablet, 1 Gm. (15 grains), may be taken every four hours for several doses. Sometimes morphine sulfate, one-fourth grain (0.015 Gm.), allays discomfort and appears to aid in stopping the attack. If recurrences are frequent morphine should not be used repeatedly, because of the danger of addiction. I have seen one such instance.

If these measures are ineffectual, acetyl-beta-methylcholine chloride (mecholy) may be injected subcutaneously in a dose of from 20 to 40 mg. (one-third to two-thirds grain). It acts by stimulating the vagus nerves. As a rule the attack ceases abruptly in from one to twelve minutes. The drug frequently causes unpleasant symptoms, among which are dyspnea, sweating, flushing and salivation; there may be vomiting and subternal pain. Some patients prefer the discomfort of the paroxysm to the distress caused by the remedy. Atropine sulfate 1.2 mg. (one-fiftieth grain), injected intravenously, will neutralize the effects of acetyl-beta-

methylcholine chloride almost at once and may be given if the reaction is stormy. Acetyl-beta-methylcholine chloride, though not a dangerous drug, should be used cautiously for patients with asthma and those suffering from conditions responding to epinephrine, which is a physiologic antagonist of the cholines.

Syrup of ipecac, from 8 to 16 cc. (2 to 4 teaspoons), may be taken by mouth to induce nausea or vomiting. It produces reflex vagal stimulation and so can end a paroxysm. If the desired effect is not obtained after one hour, the dose may be repeated. The result is unpleasant but the procedure is simple and sometimes succeeds.

For prolonged attacks, especially if signs of cardiac insufficiency appear, digitalis should be given orally in full doses. It supports the failing heart and its use is often followed by cessation of the tachycardia. Injection of digitalis or strophanthin by vein is not without hazard, and the action is uncertain.

In some cases quinidine sulfate by mouth restores sinus rhythm. Doses of 0.4 Gm. (6 grains) are given every two hours until five or six have been taken. One or two doses may suffice. In tachycardia of ventricular origin, quinidine is particularly effectual. When the arrhythmia follows myocardial infarction, large amounts are sometimes necessary and are well tolerated. As much as 0.8 Gm. (12 grains) may be given every two hours for five, six or more doses. After coronary occlusion it is desirable to end the tachycardia promptly in order to spare the damaged heart muscle from doing added work. The intravenous injection of quinidine has been tried and, on occasion, has been effective. It is not recommended because of the danger of inducing sudden cardiac standstill.

The use of drugs to prevent the recurrence of attacks may be tried, but the result is uncertain. Quinidine sulfate in doses of 0.2 Gm. (3 grains) three or four times a day, is the remedy most likely to act prophylactically and, if effective, may be continued indefinitely. In some cases digitalis in full amounts, followed by a daily maintenance ration, appears to be a better preventive. When the attacks are precipitated by emotional upsets, sedatives such as the bromides or phenobarbital raise the threshold for disturbing influences and so lessen the tendency for setting off the "trigger mechanism."

COMPLETE AURICULOVENTRICULAR BLOCK

Like other arrhythmias, complete auriculoventricular dissociation may be transient or permanent. It is caused by diseases or drugs which prevent conduction through the junctional tissues. Lesions due to rheumatic fever, syphilis, coronary atherosclerosis or the toxin of diphtheria may regress with proper therapy, and normal conduction is resumed. The effect of digitalis wears off if its administration is stopped. Structural damage or functional impairment sometimes persists and heart block becomes permanently established.

Uncomplicated permanent block does not require treatment by drugs. If the heart muscle is functionally adequate, the circulation is not seriously handicapped by the slow ventricular rate (idioventricular rhythm). If congestive failure appears, it is treated in the usual manner, including the use of digitalis. When auriculoventricular block is complete, digitalis may even accelerate slightly the rate of beating of the ventricles. Quinidine is apt to exert a harmful action in the presence of heart block and should not be employed, even though the auricles are fibrillating.

Occasionally, long periods of ventricular standstill or paroxysms of ventricular fibrillation result in cerebral anoxemia and this, in turn, causes dizziness, syncope or convulsive seizures (Adams-Stokes syndrome). It is necessary to know which mechanism is responsible for the attacks in order to carry out appropriate therapy. If the attacks are associated with ventricular asystole and are frequent, epinephrine is the best preventive. It is given in doses of from 0.5 to 1 cc. (8 to 15 minims) of the 1:1,000 solution by subcutaneous or intramuscular injection. The dose may be repeated every two hours if necessary and continued for a day or more. On those rare occasions when ventricular standstill is markedly prolonged, intracardiac injection of epinephrine may save life. Epinephrine should not be used when the attacks are due to ventricular fibrillation, since its action favors the continuation of this mechanism.

If ventricular standstill tends to recur, ephedrine sulfate is sometimes partially or wholly effective as a prophylactic. Like epinephrine, it increases the irritability of the ventricular muscle. Ephedrine is given by mouth in doses of 30 mg. (one-half grain) three or four times a day and may be continued, if indicated, for weeks or months. Barium chloride and atropine sulfate have also been tried as preventives but are, in the experience of most observers, less effective.

730 Park Avenue.

Special Clinical Article

NUTRITIONAL DISEASES IN THE UNITED STATES

• CLINICAL LECTURE AT NEW YORK SESSION

W. H. SEBRELL, M.D.

Surgeon, United States Public Health Service

WASHINGTON, D. C.

During the past few years, attention has been increasingly focused on the problem of the recognition and treatment of nutritional diseases in this country. Ten years ago it was thought that we needed to concern ourselves only with rickets, pellagra and a little scurvy. Today it is recognized that all of the known nutritional diseases probably exist to some extent in the United States. Those that appear to be of most importance are anemia, due to iron or cobalt deficiency; nutritional edema, due to protein deficiency; hyperkeratosis and night blindness, due to vitamin A deficiency; beriberi and peripheral neuritis, due to thiamine (vitamin B₁) deficiency, frequently secondary to such conditions as alcoholism, pregnancy and diabetes; lip lesions, seborrhea and keratitis, due to riboflavin deficiency; pellagra or encephalopathy, due to nicotinic acid deficiency; swollen bleeding gums, skin and subperiosteal hemorrhages, due to ascorbic acid deficiency; rickets and osteomalacia, due to vitamin D deficiency; hemorrhagic disease of the newborn, due to vitamin K (phthiocol) deficiency; tetany, due to hypocalcemia, and probably many other at present less well identified conditions with a nutritional background. It is very difficult to estimate the prevalence of these diseases, since they usually do not figure prominently in physicians' reports, and the number of deaths reported is small.

Just as a matter of interest, the reported deaths from a few of them as given by the United States Census Bureau for the period 1934-1938 are given in table 1. This table reveals some interesting facts. First, the total number of deaths from all these conditions is relatively insignificant except for pellagra. This fact has led the United States Public Health Service to put great emphasis on the prevention of this disease. The 1939 figures are not yet available from the Census Bureau, but it is to be expected that there were fewer deaths in 1939 because of the widespread use of nicotinic acid in treating this disease.

Another interesting fact to be seen in this table is the decrease in the number of deaths between 1934 and 1938 in all these diseases with the exception of beriberi. The number of deaths from beriberi in 1938 is about eight times that of 1934. Is this a real increase or is it due to better diagnosis and increased attention to this condition? There is no information available which will enable us to answer this question, although one is inclined to believe that at least part of the increase is due to better diagnosis. On the basis of the small total number of deaths per annum given in this table, in comparison with our approximately 30,000 annual deaths from diabetes, the first impression is that these diseases are relatively insignificant as a medical problem. However, it must be remembered that these are not killing diseases and the number of deaths affords little information with regard to the amount of sickness and disability. For example, iron deficiency anemia does not appear at all, yet Abbott and Ahmann¹ found that 50 per cent of 883 Florida rural school children were anemic, with hemoglobin values of 70 per cent (9.64 Gm.) or less; and some children with hemoglobin values even as low as 25 per cent were attending school. There was rapid regeneration of hemoglobin following the administration of iron and ammonium citrates to 200 children.

A few years ago it was estimated that the death rate from endemic pellagra did not exceed about 3 per cent on the basis of survey data collected by Goldberger and his associates² in 1917. This figure is probably too high today because of the number of lives now being saved by improved methods of treatment. On this basis, however, the 3,200 deaths from pellagra represent at least 100,000 cases—a figure which, in all probability, is an underestimate when the cases of nicotinic acid deficiency without cutaneous lesions as manifested by psychosis and encephalopathy are taken into consideration. There is much additional indirect information which indicates that the nutritional diseases are taking an enormous toll in illness and disability in this country. For example, Nelson³ of the United States Food and Drug Administration estimates that in 1938 the people of the United States spent more than \$100,000,000 for vitamin preparations manufactured or sold through pharmaceutical channels, or approximately \$1 for every man, woman and child in the United States. In this connection the figures on the value of vitamin products manufactured in the United States in 1937, as obtained by the United States Department of Commerce⁴ are given in table 2.

1. Abbott, O. D., and Ahmann, C. F.: Iron Deficiency Anemia in Children, *Am. J. Dis. Child.* 58: 811 (Oct.) 1939.

2. Goldberger, Joseph; Wheeler, G. A.; Sydenstricker, Edgar, and King, W. L.: A Study of Endemic Pellagra in Some Cotton Mill Villages of South Carolina, *Bull. 153, Hyg. Lab., U. S. P. H. S.*, 1929.

3. Nelson, E. M.: Governmental Control Problems in the Fortification of Foods with Vitamins and Minerals, *Milbank Mem. Fund. Quart.* 17: 248, 1939.

4. Census of Manufacturers, 1937: Drugs and Medicines, United States Department of Commerce, Bureau of the Census, Feb. 3, 1939.

From the National Institute of Health.
Read in the Medical Division of the General Scientific Meetings at the Ninety-First Annual Session of the American Medical Association, New York, June 11, 1940.

The value at the factory totals \$26,898,500, which with the usual retail mark-up of 100 per cent represents \$53,797,000 spent by the public for these preparations. It is of interest to note that the greatest expenditure, about \$21,000,000, was by the general public on vitamin products which did not comply either with the United States Pharmacopeia or with the National Formulary. This figure for 1935 was only about \$4,700,000. In other words, the business of self medication with vitamin preparations increased about fivefold in two years. Does this indicate a widespread prevalence of mild disability due to vitamin deficiencies or was this money

TABLE 1.—Number of Deaths in Registration Area of United States*

	1938	1937	1936	1935	1934
Scurvy	30	27	33	30	36
Beriberi	42	21	11	7	5
Pellagra	3,205	3,258	3,740	3,543	3,602
Rickets	244	235	270	261	292
Osteomalacia	16	17	17	12	21
Tetany	100	110	111	108	129

* As reported by the U. S. Census Bureau.

largely wasted? It probably is an indication of the success of advertising campaigns rather than sales due to real needs, since people with money enough to purchase such preparations do not constitute the large group of our population most likely to be getting a deficient diet. However, because of dietary fads and complicating diseases, undoubtedly some of this expenditure was worth while. Of more significance to us is the \$13,114,000, representing about \$26,000,000, expended on vitamin prescriptions prescribed by physicians. A figure of this magnitude must mean that physicians are becoming increasingly aware of the value of these preparations in treatment, and conversely that vitamin deficiency symptoms are widely prevalent. In addition it must be remembered that these figures, which are the latest available, are for 1937, before either nicotinic acid or riboflavin had come into wide medical use, and before much of the importance of these substances was recognized. Because of the money spent for these preparations the figure for 1939 probably will be much higher.

There is another line of evidence which indicates that the deficiency diseases may be very common and of great medical importance in this country. This evidence is based on food consumption studies.

While we have been improving our diets in some respects during the past century, they have been becoming more deficient in others. Stiebeling and Coons⁵ show that during the past fifty years there has been a decline in the consumption of grain products and meats and an increase in the consumption of milk, green leafy vegetables, tomatoes and citrus fruits. Jolliffe⁶ has pointed out that changes in wheat milling practice and decrease in grain consumption, which has been compensated by increased sugar consumption, has materially reduced the vitamin B₁ content of the American dietary during the past century. In addition to changes in dietary habits which have affected the nutritive value of the diets of most of us, there are two other important factors to be considered. The first of these is income. Under present conditions many people in this

country cannot afford to purchase an adequate diet. Stiebeling and Phipard⁷ have shown that city families with food expenditures of \$1.25 a person a week have restricted diets, while with more money to spend for food the nutritive value of the diets improved. Hambidge⁸ estimates that those who cannot now afford an economical fair diet are largely among those with incomes of less than \$750 a year, a group which he estimates includes 32 per cent of all the families and single individuals in the United States; or, to put it another way, three out of every ten city and village families do not have enough money to spend for food to get a good, completely adequate diet.

The situation does not appear to be any better with regard to farm families, in spite of the fact that they usually produce part of their own food supply. Stiebeling and Coons⁵ state that farm families with money and nonmoney incomes under \$1,000 a year scarcely included enough fruits and vegetables in their diets even in the summer months, and on the basis of figures from the National Resources Committee more than 60 per cent of the families of nonrelief farm operators in the Southeast and more than 40 per cent in the Northeast in 1935-1936 had total incomes, both money and nonmoney, of less than \$1,000. They conclude, therefore, that a large proportion of farm family diets are poorly supplied with fruits and vegetables.

To this very large group of our population which apparently subsists on an inadequate diet because of low income must be added another group of undetermined size which obtains an inadequate diet because of ignorance, improper dieting, food faddism or carelessness in spending their food money, although their income is adequate to furnish a proper diet if the money were spent wisely. Without attempting to put any specific figure on the number of people affected, such data indicate that in all probability the nutritional diseases constitute our greatest medical and public health problem, not from the point of view of deaths, but from the point of view of disability and economic loss, a fact

TABLE 2.—Value at Factory of Vitamin Products Manufactured in the United States in 1937*

	Sold Directly to or Prescribed by Physicians	Specially Prepared Packages for Sale to General Public
U. S. P. or N. F.	\$ 3,290,478	\$ 3,191,618
Special formulas	9,823,530	.....
Not U. S. P. or N. F. ....	.....	10,592,884
Total	\$13,114,008	\$13,784,502

* As reported by the Bureau of the Census, U. S. Department of Commerce.

about which we have been misled by the very low death rate and inadequate diagnosis.

People who have studied the subject, therefore, are not surprised at the volume of the current sales of vitamin products, the increasingly large number of reports on the value of various vitamins for a wide variety of conditions or the increasing use of these preparations by practitioners. It is probable that the majority of all the patients coming to the general practitioner today are given vitamin or mineral preparations in some form in the course of their treatment with apparent benefit. Because of the lack of specific diag-

5. Stiebeling, Hazel, and Coons, Callie Mae: Present Day Diets in the United States, in Year Book of Agriculture, United States Department of Agriculture, 1939.

6. Jolliffe, Norman: A Clinical Evaluation of the Adequacy of Vitamin B₁ in the American Diet, Internat. Clin. 4: 47 (Dec.) 1938.

7. Stiebeling, Hazel, and Phipard, E. F.: Diets of Families of Employed Wage Earners and Clerical Workers in Cities, Circular 507, United States Department of Agriculture.

8. Hambidge, Gove: Food and Life: A Summary in Yearbook of Agriculture, United States Department of Agriculture, 1939.

nistic methods and the vagueness and diversity of the symptoms, many physicians are likely to be careless in making an accurate diagnosis and in prescribing the proper specific therapy. It is essential that accurate diagnosis be made if treatment of the severer symptoms is to be adequate. Since as a rule large doses of the specific vitamin are necessary immediately, and frequently by parenteral injections, it may not be enough to try to solve the problem by giving some proprietary preparation reputed to contain all of the vitamins needed by man, beast or plant, since such preparations rarely have enough of any one substance to be of much therapeutic value. However, it is important also to recognize that frequently the symptoms of more than one nutritional disease are simultaneously present. This is to be expected because deficient diets are not likely to be deficient in only one factor; and, if the diet is deficient enough to produce symptoms of one deficiency, it is not unusual to find symptoms of another deficiency; or, if the diet is not improved along with specific treatment, symptoms of another deficiency may develop while the patient is under treatment. This is especially true of the members of the vitamin B complex, since these factors are usually found in varying amounts in the same foods. These deficiencies constitute a large part of our nutritional problem, the extent of which is not yet entirely clear because of the complexity of this group of substances. To date five members of this complex have been isolated, chemically identified and synthetically prepared. These are thiamine hydrochloride, nicotinic acid, riboflavin, pyridoxin (formerly called B₆) and pantothenic acid. In addition to these there are an uncertain number of others which are as yet unidentified, the importance of which for man has not been determined. When it is remembered that the value of nicotinic acid was discovered only late in 1937, the phenomenally rapid progress that has been made in this field can be understood. At that time only pellagra and beriberi were being recognized. The next syndrome to be identified was that of human riboflavin deficiency, which was recognized by Sebrell and Butler⁹ as a separate entity late in 1938 and we are still learning things about it. The symptoms of this deficiency appear to be identical with those previously described as pellagra sine pellagra, but identification became possible only after both nicotinic acid and riboflavin were made available. The typical lesion is a macerated linear fissure in each angle of the mouth, designated by earlier writers as angular stomatitis. Accompanying this the lips become scaly, appear "chapped" and have a shiny reddened, denuded appearance. For this reason it is preferable to call the entire lip lesion a cheilosis. Along with the lip lesion there is a mild, greasy, seborrheic dermatitis on a slightly erythematous base at the nasolabial folds and in some cases at the inner or outer canthi. In many cases there is also a crusty, superficially eroded lesion just inside the nares and there may be a vertical fissure at the mucocutaneous junction. Occasionally the seborrheic dermatitis is also seen about the ears or on the face and may involve other parts of the body. In addition the tongue becomes a magenta color, which can be distinguished from the bright red tongue of pellagra. These lesions may persist for months unless a correct diagnosis is made and riboflavin therapy started. Within the past few months it has been recognized that a keratitis also occurred in many

cases of this kind and that the keratitis would respond rapidly to riboflavin treatment.

Eye lesions in experimental animals with riboflavin deficiency have been noted by many observers. Goldberger and Lillie¹⁰ saw "ophthalmia" in rats on diets which are now recognized to be deficient in riboflavin. Day and his associates¹¹ have made several reports on the relationship between cataracts and riboflavin deficiency in rats, and Bourne and Pyke¹² saw cataracts and keratitis in rats on riboflavin deficient diets. Bessey and Wohlbach¹³ and Eckardt and Johnson¹⁴ have reported a high incidence of keratitis in rats on riboflavin deficient diets, and Bessey and Wohlbach¹³ found vascularization of the cornea to be the earliest and most constant manifestation of riboflavin deficiency in the rat. O'Brien¹⁵ also noted lesions of the iris and mydriasis in his rats, and El-Sadr¹⁶ noted corneal infiltration (pannus), corneal ulcers and cataracts in rats on riboflavin deficiency and found that the corneal opacity disappeared within a few hours after a single dose of 50 micrograms of riboflavin.

In addition to the evidence from animal experimentation there are many references to eye lesions associated with deficient diets in human beings which may have been related to riboflavin deficiency. The very early writers on pellagra, such as Soler¹⁷ in 1791 and Rampoldi¹⁸ in 1885, refer to such eye symptoms as inflammation of the cornea, corneal ulcers and opacities, and among the early writers on pellagra in this country Clark¹⁹ in 1909 reported pain in the eyes, conjunctivitis, failing vision and iritis, and Whaley²⁰ saw photophobia, mydriasis and superficial inflammation of the cornea among other eye lesions in pellagrins. It seems not unlikely now that, in view of the close association frequently seen between riboflavin deficiency and pellagra, many of these lesions may have been due to riboflavin deficiency. Last year Spies, Vilter and Ashe²¹ again called attention to such lesions and stated that more than 70 per cent of the patients in their nutrition clinic with frequent recurrences of pellagra, beriberi or riboflavin deficiency also have visual disturbances, some of which are characteristic of vitamin A deficiency. They noted bulbar conjunctivitis, lacrimation, burning of the eyes and failing vision which in some instances responded to riboflavin therapy, although they saw similar lesions respond to large doses of carotene. Spies, Bean and

9. Sebrell, W. H., and Butler, R. E.: Riboflavin Deficiency in Man: A Preliminary Note, *Pub. Health Rep.* **53**: 2282 (Dec. 30) 1938; Riboflavin Deficiency in Man (Arboflavinosis), *ibid.* **54**: 2121 (Dec. 1) 1939.

10. Goldberger, Joseph, and Lillie, R. D.: A Note on An Experimental Pellagra-like Condition in the Albino Rat, *Pub. Health Rep.* **41**: 1025 (May 28) 1926.

11. Day, P. L.; Langston, W. C., and O'Brien, C. S.: Cataract and Other Ocular Changes in Vitamin G Deficiency; Experimental Study on Albino Rats, *Am. J. Ophth.* **14**: 1005 (Oct.) 1931. Day, P. L., and Langston, W. C.: Further Experiments with Cataract in Albino Rats Resulting from the Withdrawal of Vitamin G (B₂) from the Diet, *J. Nutrition* **7**: 97 (Jan.) 1934. Day, P. L.; Darby, W. J., and Langston, W. C.: Identity of Flavin with Cataract-Preventive Factor, *J. Nutrition* **13**: 289 (April) 1937.

12. Bourne, M. C., and Pyke, M. A.: Occurrence of Cataract in Rats Fed on Diets Deficient in Vitamin B₂, *Biochem. J.* **29**: 1865 (Aug.) 1935.

13. Bessey, O. A., and Wohlbach, S. B.: Vascularization of the Cornea of the Rat in Riboflavin Deficiency, with a Note on Corneal Vascularization in Vitamin A Deficiency, *J. Exper. Med.* **69**: 1 (Jan.) 1939.

14. Eckardt, R. E., and Johnson, L. V.: Nutritional Cataract and Relation of Galactose to Appearance of Senile Suture Line in Rats, *Arch. Ophth.* **21**: 315 (Feb.) 1939.

15. O'Brien, C. S.: Experimental Cataract in Vitamin G Deficiency, *Arch. Ophth.* **8**: 880 (Dec.) 1932.

16. El Sadr, M. M.: Eye Lesions Associated with Riboflavin Deficiency in Rats, *Chem. Industry* **58**: 1020, 1939.

17. Soler: Osservazione medico-pratiche che formano la storia esatta di una particolare malattia chiamata pellagra, Venice 1791; cited by Harris, H. F.: Pellagra, New York, Macmillan Company, 1919.

18. Rampoldi, R.: La Pellagra e il mal d'occhi, *Ann. di ottol.* **14**: 99, 1885; cited by Harris: Pellagra.

19. Clark, A. B.: Diseases of the Eye in Pellagra, *Tr. Nat. Conf. on Pellagra*, Columbia, S. C., 1910, p. 275.

20. Whaley, A. M.: Eye Symptoms of Pellagra, *Tr. Nat. Conf. on Pellagra*, Columbia, S. C., 1910, p. 279.

21. Spies, T. D.; Vilter, R. W., and Ashe, W. T.: Pellagra, Beriberi, and Riboflavin Deficiency in Human Beings: Diagnosis and Treatment, *J. A. M. A.* **113**: 931 (Sept. 2) 1939.

Ashe²² noted a history of "visual disturbances" in patients with other symptoms of riboflavin deficiency, which disappeared in from four to six days following the administration of riboflavin. Pock-Steen²³ has reported that symptoms of photophobia, dimness of vision, mydriasis and keratitis in 109 patients with sprue were cured by riboflavin. Therefore, without attempting to give an exhaustive review of the literature it may be stated that a variety of eye symptoms have been associated with deficient diets for a long time. Within the past few months much additional light has been thrown on the subject by the contributions of Kruse, Sydenstricker, Sebrell and Cleckley.²⁴ Forty-seven patients with riboflavin deficiency showed slit lamp evidence of a vascularizing keratitis, accompanied by such symptoms as photophobia, dimness of vision, circumcorneal injection and a burning sensation of the eyeball. Gross injection of the vessels of the fornix and sclera without evidence of infection gave the picture of conjunctivitis; some showed corneal opacities, mydriasis and iritis. There was spectacular improvement in these symptoms following the administration of from 5 to 15 mg. of riboflavin daily. At the same time repeated slit lamp examinations showed rapid resolution of the keratitis and emptying of the vessels in the cornea. It was then demonstrated that the vessels on the cornea would refill with blood following withdrawal of riboflavin, and again could be made to collapse by giving riboflavin. This discovery that a keratitis is the eye lesion in man associated with riboflavin deficiency is in accord with the lesions demonstrated by Bessey and Wolbach on the rat and is supported by the more recent observations of Johnson and Eckardt²⁵ that riboflavin is of value in rosacea keratitis.

It therefore appears that at least some of the many cases of keratitis in this country of vague or unexplained etiology, even without lip or tongue lesions, are due to riboflavin deficiency. This work indicates that unrecognized riboflavin deficiency is perhaps very widespread in this country and is another indication of the probable extent of nutritional diseases.

Other recent work on the therapeutic application of vitamins to other conditions such as the use of vitamin E (alpha-tocopherol) in the treatment of muscular dystrophy or amyotrophic lateral sclerosis reported by Wechsler,²⁶ Bicknell²⁷ and Stone²⁸ and the use of vitamin K in hemorrhagic diseases of the newborn by Waddell and Guerry²⁹ are continually widening the field of clinical application of these substances. With constantly improving methods of early diagnosis of deficiency states revealing deficiencies hitherto unexpected by the clinician, and with intensive studies of the appli-

cation of the newly available pure vitamin preparations to conditions of questionable etiology rapidly revealing new therapeutic uses, physicians are becoming increasingly aware of the magnitude of the field, and of the many problems yet to be solved. Here is, indeed, one of the most fruitful fields of medical investigation, and one which is advancing so rapidly that it requires constant reading to keep up, and I want to close with the statement that the prevention and proper treatment of the nutritional diseases constitute one of the greatest medical problems in this country today.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS. HOWARD A. CARTER, Secretary.

PROGRESS REPORT OF THE CONSULTANTS ON AUDIOMETERS AND HEARING AIDS OF THE COUNCIL ON PHYSICAL THERAPY OF THE AMERICAN MEDICAL ASSOCIATION

Significant progress and advancement in the science of acoustics have led to a definite improvement in all the industrial and professional phases of hearing aids and audiometers. For example, in the advent of the thermionic tube a new method of measuring the acuity and range of human hearing is placed at the disposal of the medical profession. This method provides a means whereby controlled tones, with respect to intensity and pitch, can be applied to the human ear and a permanent record made of the hearing. Far more accurate is this method than the ones it superseded where tuning forks, acumeters, whistles or watches were used.

Even though much scientific progress has been made, many difficult problems face those who endeavor to aid the deafened. In instances in which acquiring a hearing aid may help, both the otologist who recommends wearing an instrument and the manufacturer who sells it must seek to overcome a peculiar type of resistance in the deaf person. Although hearing aids become less noticeable as they diminish in size they still are quite visible, and in some instances there seems to be retained some vestige of the sardonic situations associated with the old fashioned ear trumpet. A sensitive person sometimes refuses to wear the device or, if he does, he does so reluctantly and as a last resort. False pride, therefore, hinders some in becoming adapted to the use of a good hearing aid.

Some years ago, much the same type of resistance was met by the ophthalmologist who recommended the wearing of eye glasses. This resistance has not entirely vanished, but today glasses usually are worn readily by those requiring them. The problems of the person who should wear a hearing aid and of those who must wear glasses are not altogether parallel; however, the common acceptance and wearing of glasses would seem to indicate that, in the future, hearing aids will become more commonly accepted and generally worn. Before the instruments reach a desired perfection and do gain this acceptance, many problems confronting the otologist and the manufacturer of audiometric equipment must be met and solved.

Although audiometers of reliable construction had been marketed for many years, no standards for the instruments had been fixed or generally accepted, and although the Council on Physical Therapy had considered hearing aids for inclusion on its list of accepted devices, no great progress in the art of helping the deafened had been made. In 1935 it was observed by the late Dr. Austin A. Hayden, Secretary of the Board of Trustees of the American Medical Association, that an efficient procedure might be for the Council to appoint a group of consultants, having special training and experience in the field, to assist in setting up minimum requirements for acceptance of audiometers and hearing aids and to help in the consideration of them as well as the conservation of hearing. His recommenda-

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tion to the Board of Trustees that such a group be appointed was supported by Drs. Thomas S. Cullen, Ralph A. Fenton and the late Charles Wright, members of the Board of Trustees who had a special and personal interest in the problem. In 1936 the Council was authorized to appoint a group of consultants for this purpose.

Appointed as consultants on Dr. Hayden's recommendation were Drs. George M. Coates, Lee W. Dean, Edmund P. Fowler, Isaac H. Jones, Douglas Macfarlan, Horace Newhart, Burt R. Shurly and William P. Wherry. C. C. Bunch, Ph.D., took over the work of Dr. Dean at the latter's request, and Dr. C. Stewart Nash was appointed as a consultant in July 1939. At the first meeting Dr. Newhart moved that Dr. Hayden be appointed chairman and he was duly elected. Paul Sabine, Ph.D., of the Riverbank Laboratories, and W. C. Beasley, Ph.D., of the United States Public Health Service, have given generous assistance to the Council.

In order that the special problems facing those interested in prescribing and making hearing aids available to the deafened might be more clearly understood and effectively handled, it was considered necessary to pursue a course especially suited to dealing with the problems. What proved to be a very effective method of promoting mutual understanding between otologists and hearing aid manufacturers was a series of joint meetings of representatives of each group. Hence, according to the minutes of the Board of Trustees, by motion of Dr. Hayden, seconded by Dr. Wright, funds were made available for holding the first of the conferences, where the consultants met with the manufacturers of audiometers and hearing aids. Since then the Board has continued its cooperation with the Council and consultants in authorizing additional appropriations to carry out this special program.

A conference of this nature is not amenable to the procedure of the Council on Physical Therapy because of time limitations when the Council holds its meetings. However, the Council felt that such a meeting would be of great value for the consultants in evaluating all the phases of the problem. Personal contacts of this kind between the consultants and representatives of the manufacturers have proved very useful; several consultants and the Secretary of the Council have also made inspection visits to plants where the instruments are manufactured. In all, three meetings have been held with most creditable results.

The first of the meetings, held at the Palmer House in Chicago, Aug. 8, 1937, provided an opportunity for each manufacturer of audiometers to acquaint the consultants with his unit through an actual demonstration of the apparatus. The advantages and limitations of each unit, and the extent to which it met the tentative requirements, were discussed. The great value of this meeting lay in the fact that it made it possible for the consultants to obtain better insight into the problems confronting the manufacturers of the instruments and it revealed to the manufacturers the difficulties otologists encountered in testing hearing and using the information in clinical practice.

The Council and the consultants had been of assistance to the American Standards Association subcommittee when that group formulated its Tentative Minimum Specifications for Audiometers for General Diagnostic Purposes. These specifications provided an excellent groundwork for the compilation of the Council's minimum requirements. However, a conference between the consultants and the representatives of audiometer and hearing aid manufacturers and voluminous correspondence were required before the adoption and publication of the Council's Tentative Minimum Requirements for Acceptable Audiometers. The publication date was Nov. 27, 1937.

The second joint meeting with the consultants and the manufacturers was also held at the Palmer House in Chicago; it took place Aug. 20, 1938. The Tentative Minimum Requirements for Acceptable Audiometers were considered further. Specifications for acceptable hearing aids, and the practicability of using the audiogram in fitting them, were also discussed. The claims made in advertising and the promotion of hearing aids were also considered. Both the consultants and the manufacturers were afforded a clearer conception of the problems of each by this discussion.

At the third joint meeting with the consultants and representatives of hearing aid manufacturers, held May 5, 1940, the

Minimum Requirements for Acceptable Audiometers were reviewed and the Tentative Minimum Requirements for Acceptable Electric Hearing Aids were given consideration. Several minor changes were made in each. Advertising claims advanced by the manufacturers for their instruments were discussed. Trial periods for prospective hearing aid purchasers were given consideration.

By far the greatest volume of the work and the majority of the deliberations have been carried on by correspondence. From time to time, usually once a month, communications or confidential bulletins are sent to the consultants from the A. M. A. headquarters in Chicago. Embodied in these mimeographed communications are reports, discussions and votes on the matter before the consultants. The questions are arranged so that ample space is given for discussion, criticism and voting. Questions are worded so that they recommend to the Council certain actions. The Council then acts on these recommendations, either accepting or not accepting them. Since the appointment of the consultants three years ago thirty-four communications, or about 600 pages of single spaced copy, have been sent to each of the members. An enormous quantity of advertising material has also been presented to them for review and criticism.

On Feb. 25, 1939, the Minimum Requirements for Acceptable Audiometers were published. Three audiometers have been accepted: the Maico Audiometer D-5, the Western Electric Audiometer 6B and the Jones-Knudson Audiometer, which is no longer on the market because of excessive cost of production. Other audiometers are before the Council and are still undergoing consideration. More recently the Council has considered the possibility of compiling minimum requirements for acceptable audiometers used for group screening tests. Two screening audiometers, a phonograph type and an oscillator type, have been submitted to the Council. For the first time in history real standards for audiometers to test hearing are available.

Although the Council had considered hearing aids prior to the appointment of the consultants in 1936, one hearing aid having been placed on the list of accepted devices in 1935, after the consultants became active much greater progress was made. There are now eleven hearing aids on the Council's list of accepted devices; seven are of the carbon granule type, two of the vacuum tube and two of the semiportable type. The accepted hearing aids are the Acousticon Hearing Aid, Coronation Acousticon Hearing Aid, Aurex Hearing Aid (semiportable), Radioear, Radioear De Luxe Type B-20, Maicophone Hearing Aid (vacuum tube), Ravox Hearing Aid (semiportable), Sonotone Hearing Aid, Telex Hearing Aid (vacuum tube), Western Electric Audiphone and Western Electric Audiphone, Ortho-Technic Model. Six hearing aids of the vacuum tube type are now undergoing consideration.

It is the opinion of the consultants, as expressed by Dr. Nash, that hearing aids should be fitted by otologists after a complete otologic examination including the inspection of aural polyps and the tympanic cavities for carcinoma or tumor, and audiometric test, tuning fork, voice and whisper test. The physician is in a better position to analyze the wants of a deafened patient than a technician or salesman. He will know whether lip reading instruction, a surgical operation or the application of a hearing aid is the correct way to solve the patient's problem. When a hearing aid is prescribed or fitted, Dr. Macfarlan points out that the otologist is better trained to test the efficiency of the aid by voice tests using words, syllables and meaningless phrases. However, the consultants feel that this is not the time to lay down any hard and fast rules to the effect that no aid should be sold without an otologic evaluation and physician's prescription.

Requests from insurance companies, courts of law, compensation boards and other interested groups have been brought to the attention of the consultants concerning the need of standardized tests for determining hearing loss and a method for estimating hearing loss in terms of percentage. At the annual session of the American Medical Association in St. Louis in 1939 the House of Delegates approved the program outlined by the Council to meet requests. This problem is now being considered by the Council and consultants.

When one special field of medicine comes to another with a controversial question, as pointed out by Dr. Wherry, each side

is aware of the difficulties involved in formulating a clearcut, definite answer, and the profession accepts a tentative answer which may be subject to revision. However, when industry comes to medicine with a question on a controversial subject, industry will be satisfied with nothing but a definite answer. As the question of ear impairment and percentage loss concerns industry through the compensation boards, courts of law and insurance companies, the answer given by the Council and consultants to this problem of the standardization of tests for hearing loss and the estimation of loss in terms of percentage must be clearcut and definite. As this is a highly controversial question, involving the combination of many variables that must be reduced to a common denominator, ample deliberation must be given to it before a final answer is made.

The Section on Ophthalmology of the American Medical Association has developed a method for estimating the visual acuity in terms of percentage; this method has been adopted by the House of Delegates. Many states have officially adopted it as the method of estimating visual loss. Industrial surgeons practicing orthopedic surgery have made significant advances in the estimation of percentage loss of movements caused by damage to extremities. The consultants and the Council are doing the same with hearing impairment.

A special committee of the consultants, comprised of Drs. Bunch, Hayden, Nash, Newhart, Sabine and Wherry, has been formed to deliberate on this question. Two methods for estimating the loss of hearing in terms of percentage are now being considered by the committee. One method was proposed by Dr. Bunch and the other by Dr. Fowler. Although they have been carefully considered for several months, a final decision has not yet been reached and it is the opinion of the committee that the acceptable method will involve some of the points of each of the proposed methods. More study will be required before the consultants and the Council can adopt a recommendation for estimating the loss of hearing in terms of percentage.

The consultants have given consideration to the problem of developing acceptable screening audiometers for use in schools, industrial plants and other institutions. The great value in the periodic testing of hearing of public school children in the prevention of deafness of any scale has often been pointed out by Dr. Newhart. Dr. Jones has written about the audiometer and its place in the educational field especially in the public schools. Dr. Shurly has demonstrated how the family physician may be consulted in connection with the information obtained from screening tests made in the public schools at Detroit. Although the consultants are giving consideration to the drawing up of minimum requirements for acceptable screening type audiometers, the data now available are not definite enough on which to build.

Part of the activities of the consultants have been devoted to education such as making available significant information on the clinical use of the audiometers, on how to take an audiogram and on the construction of the instrument. Thus the Secretary of the Council has presented exhibits at annual sessions of the American Medical Association and at meetings of the American Academy of Ophthalmology and Oto-Laryngology. These exhibits have been designed purposely to explain by means of demonstrational apparatus the makeup of physical characteristics of audiometers and hearing aids.

What is more important in education is instruction regarding the prevention of deafness. The program advanced several years ago by Dr. Coates on the prevention of deafness among industrial workers is still as sound today as it was then. Many of the consultants have given courses and exhibits at the annual meetings of the American Academy of Ophthalmology and Oto-Laryngology and read papers before the American Otological Society, the American Laryngological, Rhinological and Otological Society, Inc., and the Section on Laryngology, Otology and Rhinology of the American Medical Association.

The work of the Council and its consultants has been recognized by the American Society for the Hard of Hearing in that this organization has voted to place for publication in *Hearing News* after January 1941 only hearing aids accepted by the Council.

The consultants and the Council have not been without criticism. An apparent variation on different clinical audiometers

due to calibration has been noted by several observers. This variation arises in the amount of energy required for the threshold of hearing and also by the fact that the energy required for a threshold has not been fixed definitely by any authoritative body. Hence the consultants supported by the representatives of manufacturers will request the National Bureau of Standards to establish a standard threshold level as soon as possible.

It has been pointed out by Dr. Willis C. Beasley in connection with the work of the United States Public Health Service national health survey that sufficient information should be available to fix the standard for the threshold of hearing. Dr. Bunch has duplicated these results independently. It is believed that, together with U. S. Public Health Service data and the data collected at the Bell Telephone Laboratories' exhibit at the New York World's Fair, there are sufficient data to peg the threshold. It is relevant to add that the audiometers on the accepted list are calibrated to a threshold which will not be far from the ultimate accepted one. Various agencies have been working together for some time and thus agreement in opinion will probably not be difficult to achieve.

The Council has been questioned concerning the delay in the publication of acceptance reports of audiometers. One of the chief reasons for the delay was that the manufacturers of audiometers were apparently unable to meet the requirements which they themselves assisted in setting up and agreed as being just and reasonable. Another obstacle was the controversy over requirements with respect to purity of tone and maximum of intensity.

An explanation as to the delay in the adoption and publication of the requirements for acceptable electrical hearing aids also appears to be indicated, as there have been many requests for these requirements. Much advancement and many changes in the manufacturing phase are constantly occurring, and, in the opinion of the Council and the consultants, to set up restricting and unadaptable requirements would be a greater detriment to progress than not to set up any requirements at all. Tentative Minimum Requirements for Acceptable Hearing Aids were published in *THE JOURNAL*, May 11, 1940, and they are expected to go into effect in January 1941. These requirements are not to be interpreted as standards.

The procedure of the Council on Physical Therapy in the consideration of an audiometer or hearing aid is as follows: The Council on Physical Therapy is a standing committee of the Board of Trustees and its duties are to consider apparatus offered to the medical profession for diagnostic or therapeutic purposes, to study any methods of therapy involving physical agents (chemical agents excluded) and to assist in making such information available to the profession.

The members of the Council on Physical Therapy, as well as the consultants on audiometers and hearing aids, serve without remuneration. The Council members give consideration to and vote on questions submitted to them in the Council's confidential bulletin.

The booklet "Official Rules of the Council on Physical Therapy" is sent to the manufacturer of an audiometer or of a hearing aid who desires the Council's consideration of his instrument. The firm is asked to comply with the requirements given on the last two pages of the booklet and to submit a report from a qualified laboratory relative to the performance of the instrument, being guided by the Minimum Requirements for Acceptable Audiometers or by the Minimum Requirements for Acceptable Hearing Aids as the case may be.

The evidence submitted by the manufacturer is sent to an independent and impartial laboratory acceptable to the Council, where it is checked. If confirmed, a report is prepared recommending acceptance. If, however, the evidence submitted by the firm is not confirmed, a report of rejection is prepared and after adoption by the consultants and the Council it is sent to the manufacturer for his information prior to publication.

The final decisions of the Council concerning the acceptability or nonacceptability of audiometers and hearing aids along with other actions of the Council are published in *THE JOURNAL* from time to time under the Council's proceedings. The Council also edits a booklet entitled "Apparatus Accepted" in which audiometers and hearing aids are listed along with other apparatus having been accepted and placed on the list of accepted devices.

CONCLUSION

The Council on Physical Therapy and the Consultants on Audiometers and Hearing Aids have made the following advancements in the consideration of audiometers and hearing aids and the conservation of hearing:

1. Minimum requirements for acceptable audiometers have been formulated and adopted. The requirements have received universal acceptance on the part of otologists and manufacturers.

2. Three audiometers for diagnostic use have been investigated and accepted.

3. Requirements for acceptable hearing aids have been formulated and adopted.

4. Hearing aids have been investigated and accepted or rejected and this information has been made available to the profession and the public.

5. A survey of methods for determining the percentage of disability due to deafness has been started. The House of Delegates at the St. Louis session endorsed the work accomplished and objectives aimed at.

6. Information on devices used for treatment of hearing loss has been made available (e. g., stimulation of hearing by sound).

7. Advertising of acceptable hearing aids and audiometers has been reviewed, considered and criticized and much undesirable copy has been eliminated.

8. The Council has assured high standards of construction, workmanship and material.

Finally, the Council desires to express its appreciation to the Consultants on Audiometers and Hearing Aids for the valuable assistance that has been rendered by them for the past two years, and also to the several general and special medical societies for their cooperation.

SEARS S-4 SUNLAMP ACCEPTABLE

Manufacturer: Northern Electric Company, 5224 North Kedzie Avenue, Chicago.

Distributor: Sears, Roebuck and Company, Chicago.

The Sears S-4 Sunlamp produces ultraviolet radiation and consists of a standard mazda S-4 type bulb together with a standard reflector following the curvature and reflection specifications. The bulb is mounted in a socket permanently fixed in a socket housing which also holds the reflector, so that at all times the bulb will be at the proper location with reference to the reflector. The complete assembly of the bulb, reflector and socket are fixed to an adjustable standard mounted in a cast iron base which encloses the transformer.

The type S-4 mazda sunlamp consists of an electric arc discharge through mercury vapor between activated metal electrodes sealed in a small quartz capillary tube which, in turn, is enclosed in a bulb of special glass that is opaque to ultraviolet radiation of short wavelengths.

The radiation passing through the quartz capillary tube is essentially that of the so-called "hot quartz" mercury arc. However, by inclosing the quartz lamp in a bulb of glass of a composition and thickness to absorb completely the intense emission lines of wavelengths shorter than about 2,800 angstrom units, there remains a series of strong emission lines at 2,894, 2,967, 3,024 and 3,132 angstrom units (and longer wavelengths) favorably situated in the spectral band of ultraviolet in sunlight recognized as having a specific therapeutic effect, especially in curing rickets.

Operation: The S-4 lamp is operated on the ordinary (115 volts) house lighting (A. C.) circuit, but it requires an intermediary, especially designed, transformer to maintain the proper voltage and operating temperature. The approximate power used is 100 watts. In the lamps tested, on 115 volts input, the current through the lamp ranged from 2.1 to 2.3 amperes.

Radiation Measurements: In order to determine whether the type S-4 lamp complies with the Council's requirements of acceptability as a sunlamp, spectral ultraviolet radiation measurements were made in a laboratory selected by the Council. These measurements showed that the radiation of wavelengths shorter than 2,800 angstrom units is immeasurably small.

In this investigation the lamp was placed close in front of the quartz-fluorite achromatic spectroradiometer, and the spectral intensities were measured with a vacuum thermopile. The

relative spectral intensities (galvanometer deflections) corrected for absorption in the spectroradiometer are given in the accompanying table:

Wavelengths (Angstrom Units)	Relative Energy (Average of 3 Lamps) Microwatts per Square Cm.
3,132	7.96
3,024	2.59
2,967	1.15
2,894	0.28
2,804	0.09
Total	12.07

The radiation at 2,804 angstrom units (and shorter if measurable) is about 0.75 per cent of the total of all wavelengths, including 3,32 angstrom units and shorter. Mounted in an aluminum reflector the radiation at 2,804 angstrom units and shorter, relative to the total, would be still lower. Hence, these lamps comply with the Council's requirements for acceptability of a sunlamp for spectral quality of ultraviolet radiation.

Erythema Test: The untanned inner side of the upper arm, at a distance of 24 inches (61 cm.) from the lamp in an aluminum reflector, was exposed to lamp #12 on 108 volts for intervals of two, four, six, eight, ten, twelve and fifteen minutes. A mild erythema was obtained on six minutes' exposure. Exposures of eight minutes and longer were too long—the exposed part was still red after three days. With a standard voltage (115) and a modern reflector, the exposure time for an minimum perceptible erythema would be still shorter.

The lamp has been investigated clinically and found to be satisfactory.

The Council on Physical Therapy voted to accept the Sears S-4 Sunlamp for inclusion on its list of accepted devices.

Council on Pharmacy and Chemistry

PRELIMINARY REPORT OF THE COUNCIL

EHRLICH, OFTEN TERMED THE FATHER OF CHEMOTHERAPY, INTRODUCED THE USE OF BETTER ARSENICALS IN THE TREATMENT OF SYPHILIS. HE EARLY RECOGNIZED THE SPIROCHETICIDAL EFFECT OF ARSENOXIDE BUT DISCARDED IT BECAUSE OF ITS GREAT TOXICITY. IT REMAINED, THEREFORE, FOR AMERICAN WORKERS, TATUM ET AL. OF THE UNIVERSITY OF WISCONSIN, TO SHOW THAT A SIMPLIFIED DERIVATIVE OF ARSENOXIDE, HIGHLY PURIFIED, WAS EFFECTIVE AND RELATIVELY SAFE IN THE TREATMENT OF SYPHILIS. THIS PRODUCT WAS RECOGNIZED BY THE COUNCIL AND IS SOLD UNDER THE TRADE NAME OF MAPHARSEN. RECENT STUDIES HAVE BEEN MADE OF THE USE OF THIS LATER DERIVATIVE OF ARSPHENAMINE FOR CONTINUOUS TREATMENT OF SYPHILIS OVER A PERIOD OF DAYS (THE SO-CALLED DRIP METHOD). IN VIEW OF THE INTEREST IN THIS METHOD AND THE RESULTS WHICH HAVE BEEN REPORTED THE COUNCIL DEEMED IT ADVISABLE TO MAKE A PRELIMINARY REPORT AND AUTHORIZED PUBLICATION OF THE FOLLOWING STATEMENT.

PAUL NICHOLAS LEECH, Secretary.

CHEMOTHERAPY OF SYPHILIS BY MASSIVE DOSE INTRAVENOUS DRIP

Great strides have been made in the treatment of syphilis, particularly in the last thirty-five years. At first, use of the mercurial preparations was elaborated. With discovery of Spirochaeta pallida, of the serologic tests for syphilis, of the specific arsenical preparations, and finally of the various bismuth salts, further great advances have been made.

Nevertheless, the fact still remained that it required a comparatively long time to get rid of the symptoms to such a point that the disease was not a menace to public health. This of course entirely ignored the effects of the disease on the patient. They were even slower to eradicate.

Various attempts have been made to find new specific remedies, and physical therapeutic agents using heat have been tried—none of them answering the problem.

It occurred to no one that perhaps by employing agents already at hand in a new form of attack it might be possible to exert greater effect on the disease.

It has remained for Chargin, Hyman, Leifer and Rice at the Mount Sinai Hospital perhaps to find such a loophole, utilizing intravenous drip therapy.

Hyman and his collaborators¹ have shown that when active or inert chemicals, drugs and biologic fluids are injected intravenously in a rapid manner they may give rise to alarming symptoms and may at times even be fatal—so-called speed shock. The animals studied showed rapid fall of blood pressure, sometimes fatal, with dyspnea, and noncoagulation of the drawn blood. These investigators found that even when simple saline solutions were employed, if there was fatality, necropsy showed multiple punctate hemorrhages of the viscera and atelectasis or emphysema of the lungs with thrombi of the veins. Experimentally if they regulated the rate of flow of the preparation by means of intravenous drip so that not more than 2 or 3 cc. a minute was injected, even toxic substances such as histamine could be introduced without difficulty.

Experiments were tried in man with the intravenous drip for physiologic solution of sodium chloride, dextrose and citrated blood, and it was thought by the authors that it might even be possible to employ potent agents in greater doses than have been employed in the past without severe reactions or damage to the host. Chargin² felt that the method might be applied to the administration of larger doses of arsenicals than are ordinarily employed in the treatment of early syphilis, and in 1933 Chargin, Leifer and Hyman³ treated twenty-five persons who had early syphilis by means of the intravenous drip given in the form of solutions of 4 Gm. of neoarsphenamine over a course

solution 5 per cent, and these alternate doses were employed until the total dose had been administered for the day, so that in a period of fifteen hours the patient would have received 1,500 cc. of 5 per cent dextrose solution and 1 Gm. of neoarsphenamine.

Toxicology.—Primary Herxheimer fever was noted in 57 per cent of the patients. The average height was 102, and the highest temperature recorded was 105 F. The longest duration of febrile reaction was four days. A secondary fever appearing toward the latter part of the therapy was noted in 63 per cent of the patients.

Toxicodermas.—Scarlatiniform, morbilliform or erythema multiforme-like toxicodermas occurred in forty patients. An additional four patients developed toxicodermas in the follow-up. One patient developed a desquamation of the skin. A true dermatitis exfoliativa occurred once and was followed by complete recovery.

Peripheral neuritis occurred in 38 per cent of the patients and lasted as long as from four to six months. There seemed to be no relation between arsenic excretion or retention and the neuritis. There were no symptoms of damage to the kidneys. Four patients developed mild jaundice. Seven patients had an icterus index that exceeded 10. Five had a later secondary icterus index of 15 or more. A hemorrhagic tendency developed five weeks after the treatment in one of the early patients, and it was found that he had a thrombocytopenia, which was cured by splenectomy. Two patients exhibited cerebral symptoms suggesting a hemorrhagic encephalitis, and one of them died. It was noteworthy that nitritoid crises, various types of atrophy and degeneration of the liver, aplastic anemia and pulmonary embolizations were absent as toxicologic phenomena.

Arsenic Excretion Studies.—Analyses of the total urine and feces in twelve unselected cases showed that 20 per cent was excreted in the urine and 32 per cent from the feces during the course of therapy.

Clinical Results.—The patients showed rapid healing of the primary and secondary lesions. Darkfield studies became negative invariably in twenty-four hours. All of the patients showed good appetites and many showed gain in weight.

Effect on Serum Reaction.—These patients were checked very carefully from the standpoint of serologic reactions, and sixty-seven, 86 per cent, who were adequately followed showed complete seroreversal. Comparison of the first series with the series reported in this paper showed that the nitritoid crisis was not observed in any case. Polyneuritis was present in 32 per cent of the first and 38 per cent of the second series. Administration of vitamin B to the patients did not lessen this symptom, nor did vitamin C protect any of the patients in the second series from secondary fever.

The clinical results were quite parallel in the two series. Serologic reversal was obtained in approximately 90 per cent of both groups. There were five acknowledged failures. In the first group one patient with inadequate therapy, 2.9 Gm., had persistent seropositivity at his last visit at four months. In the second group two clinical relapses and two serologic relapses were reported.

Because of the importance of the entire problem and of the results obtained, it was thought best to gain the help and advice of public health authorities, of several foundations, and of clinicians in other institutions and in other capacities, and a Committee on Massive Drip Intravenous Therapy was formed.⁴

The committee has since made available an outline of massive dose chemotherapy of early syphilis by the intravenous drip method. Because of the toxic symptoms noted after the use of neoarsphenamine, it was decided to employ mapharsen. At first this was used in small doses, but because of the frequency of relapses and the lack of toxic symptoms the dose was gradually increased to 1.2 Gm. of mapharsen in a course of five

Toxic Effects

	Neoarsphenamine	Mapharsen
Total treatment courses.....	111	283
1. Primary fevers	69 (62%)	115 (41%)
2. Secondary fevers	71 (64%)	35 (12%)
3. Toxicodermas	50 (45%)	32 (11%)
4. Dermatitis exfoliativa	1* (0.9%)	0
5. Blood dyscrasias	0	0
6. Renal damage	0	0
7. Jaundice	4 (3.6%)	2 (0.7%)
8. Peripheral neuritis	39 (35%)	5 (mild) (1.7%)
9. Cerebral symptoms (total).....	2 (1.8%)	3 (1.06%)
a. Hemorrhagic encephalitis...	1 (0.9%)	1 (0.35%)
b. Single convulsion	1 (0.9%)	1 (0.35%)
c. Disorientation	0	1 (0.35%)
10. Fatality	1 (0.9%)	0

* Received sulfanilamide for complicating gonorrhea.

of five days. Five of these patients were not followed beyond the fifth month of the first year. The remaining twenty patients all showed complete serologic reversals, though five were not followed a sufficient time for satisfactory observation. Fifteen were examined on or about the fifth year. Eleven of these had repeatedly negative Wassermann reactions. Two of the fifteen had become reinfected with syphilis, one of these instances being indubitable and the other highly presumptive. It was felt that the results had been so promising that a further study should be made, and eighty-six men were used, the average dose of neoarsphenamine being slightly in excess of 4.1 Gm. and the duration of treatment slightly less than five days.

The technic employed was similar to that first used: First an intravenous drip of 100 cc. of a 5 per cent dextrose solution; at the end of an hour a solution of 0.1 Gm. of neoarsphenamine dissolved in 50 cc. of 5 per cent dextrose solution was used; this in turn was followed by another hour of plain dextrose

1. Hirschfeld, Samuel; Hyman, H. T., and Wagner, J. J.: Influence of Velocity on Response to Intravenous Injections, *Arch. Int. Med.* **47**: 259 (Feb.) 1931. Hyman, H. T., and Hirschfeld, Samuel: Therapeutics of Intravenous Drip, *J. A. M. A.* **100**: 305 (Feb. 4) 1933; Studies of Velocity and Response to Intravenous Injections: Technic of Intravenous Drip in Clinical Practice, *ibid.* **96**: 1221 (April 11) 1931. Hyman, H. T., and Touroff, A. S. W.: Therapeutics of Intravenous Drip: Further Observations, *ibid.* **104**: 446 (Feb. 9) 1935.
2. Chargin, Louis; Leifer, William, and Hyman, H. T.: Studies of Velocity and Response to Intravenous Injections: Application of Intravenous Drip Method to Chemotherapy as Illustrated by Massive Doses of Arsenphenamine in Treatment of Early Syphilis, *J. A. M. A.* **104**: 878 (March 16) 1935.
3. Hyman, H. T.; Chargin, Louis, and Leifer, William: Massive Dose Arsenotherapy of Syphilis by Intravenous Drip Method: 5 Year Observations, *Am. J. M. Sc.* **197**: 480 (April) 1939.
4. Dr. Charles C. Lieb, chairman, and Drs. George Baehr, Louis Chargin, Walter Clarke, Eugene Du Bois, Harold Thomas Hyman, William Leifer, John F. Mahoney, Walter W. Palmer, Theodore Rosenthal, Evan Thomas, Bruce Webster and John L. Rice, commissioner of health, New York City.

days, i. e. 0.24 Gm. daily, and, instead of alternating an hour's use of 5 per cent dextrose solution with an hour's treatment of the mapharsen solution, 10 mg. of mapharsen is dissolved in 100 cc. of 5 per cent dextrose solution and administered simultaneously. The usual procedure is to prepare 600 cc. of such solution, containing 60 mg. of mapharsen, enough for three hours of treatment. When the apparatus containing 2,000 cc. of 5 per cent dextrose is used, a total daily dose of 0.24 Gm. of mapharsen is prepared the first thing in the morning and the solution is administered over a ten to twelve hour period. This simplifies the technic to a great extent. The hourly dose consists of 0.02 Gm. in 200 cc. of 5 per cent dextrose solution.

Variants in the usual procedure: A. There is a primary fever on the first day and therapy is stopped if the temperature reaches 101.4 F. or more. This usually happens by the sixth to the eighth hour. This insufficient dose is compensated for in the following manner: First day 0.12 Gm. of mapharsen is administered; on the second, third and fourth days 0.28 Gm. of mapharsen; on the fifth day 0.24 Gm. of mapharsen.

B. When clinical jaundice appears in the course of the treatment the procedure is interrupted. This has been seen but once in all of the cases.

Insufficient time has elapsed since the use of mapharsen to justify a final estimate of its effects as compared to those of neoarsphenamine. The toxic effects in the neoarsphenamine and mapharsen series are given in the accompanying table.

It is to be noted that there have been only five cases of peripheral neuritis (and mild) with the mapharsen (1.7 per cent), as against thirty-nine (35 per cent) with the neoarsphenamine. Primary fevers are lower with mapharsen than with neoarsphenamine; secondary fevers usually appear the evening of the last day of therapy and generally return to normal in a matter of a day or so. There were only one fifth as many of the latter with mapharsen as with neoarsphenamine. Toxicodermas in the form of a morbilliform or urticarial eruption were again only a fourth as many with mapharsen as with neoarsphenamine. While there were no cases of death from hemorrhagic encephalitis with mapharsen, nevertheless one of the patients developed convulsions two days after termination of therapy and lapsed into a stupor, in which he remained for forty-eight hours. The other two cases of cerebral symptoms were mild, one with a single convulsion and prompt complete recovery, the other showing merely a state of mental confusion. This type of reaction, however, which is one of the most dreaded of the arsenical complications, is apparently seen with mapharsen as well as with neoarsphenamine. Fortunately there was no fatality with mapharsen.

It may not be amiss to mention some later work along the same line investigated by Tzanck and his collaborators.⁵ Working on the idea of Pollitzer's three daily maximal doses of an arsenical, he has devised the scheme of utilizing these doses in far larger amounts but by the same intravenous drip method which has been discussed. The claim is made that this work is entirely independent.

These investigators have treated 157 patients with neoarsphenamine by a drip method, 0.01 Gm. per minute, 1.5 Gm. a day for three days. They report that the lesions disappear rapidly; that mucous patches disappeared in two or three days; that the spirochetes could not be found after one day. The serologic reactions are reported to be almost always negative in less than two months, even in two weeks in some cases.

The technic consisted in the use of 0.01 Gm. of neoarsphenamine per cubic centimeter of physiologic solution of sodium chloride, one drop given every three seconds. A light rise of temperature was observed early in therapy. No nitritoid reactions were observed. Patients were then given two months of bismuth therapy and another three days of arsenical treatment as described. No details are given as to follow-up and

study of the patients, and at least as far as publications are concerned this work does not show the care and detail used by the Mount Sinai group.

COMMENT

The work carried on by Tzanck and his co-workers in principle at least resembles the investigations of Chargin, Hyman, Leifer and Rice. Both aim at Ehrlich's idea of "therapia magna sterilisans." Nevertheless, the American workers prefer that their project be considered by itself. It is true that they also have priority. Moreover, their cases have been far more carefully studied preliminary to as well as throughout the investigation, and follow-up on their cases has been of the best possible. Thus the early studies of Hyman and his collaborators on influence of velocity in intravenous injection were carried on from 1931 to 1935, and as early as 1933 Chargin and his co-workers utilized these principles in the use of arsphenamine in massive doses for the treatment of syphilis. The work of Tzanck and his co-workers first appeared in 1938 and, while it was claimed to be entirely independent, nevertheless it utilized the principles of the intravenous drip.

The principle of this new advance in syphilotherapy is based on the ability through continuous drip therapy to utilize doses of arsenicals far larger than can ordinarily be safely administered to human beings. The results with the first twenty-five cases treated in 1933 were promising, so promising that a larger group of patients, eighty-six, were treated with neoarsphenamine. Arsphenamine was not found to be practicable because of irritation of the vein walls. Response to therapy was gratifying, lesions healed rapidly, spirochetes disappeared in less than twenty-nine hours. Of the patients adequately followed, 86 per cent showed complete seroreversal. There were five acknowledged failures in the two groups. From the standpoint of reactions a peripheral neuritis, lasting from four to six months, was noted in about one third of the cases. Moreover, 2 per cent of the patients had cerebral symptoms suggesting hemorrhagic encephalitis, and one of them died. Nitritoid crises, severe liver damage and aplastic anemia were notable by their absence. Nevertheless the frequency of toxic symptoms was so high that the group, in consultation with the larger group already mentioned, thought it best to utilize another arsenical, mapharsen. This arsenical has been used in 283 further cases. In the earlier ones the dosage was too small, resulting in a certain number of relapses. The dose now being employed, 0.24 Gm. of mapharsen a day for five days, is giving a satisfactory clinical result, although the time elapsed is too short to predict what the final five year results will show. There has been a notable drop in toxic effects as compared to those seen with neoarsphenamine. Yet one of the dreaded complications, hemorrhagic encephalitis, was still noted in three of 283 cases. Fortunately, only one of these was severe. No fatalities resulted from the use of mapharsen.

The public health aspects of this new departure in syphilis therapy are tremendous in their possibilities of rapid sterilization of early contagious syphilis. On the other hand, results in syphilis therapy cannot be determined over night, and a system that still gives evidence of possible hemorrhagic encephalitis in one of apparently every hundred cases treated is by no means a foolproof procedure.

In the opinion of the Council on Pharmacy and Chemistry the work of Chargin, Hyman, Rice and Leifer with continuous intravenous drip massive doses of arsenicals in the treatment of early syphilis offers great possibilities. In view of the frequency of toxic reactions, some of them grave in type, the Council believes a conservative attitude of the medical profession to be advisable. Such a form of syphilis therapy is still in the experimental stage and should be confined to large university and public health clinics or suitable hospitals organized to carry on this project on a recognized experimental plane. It may well be that animal experimentation may also do much to assist in answering the question. In the meantime the entire medical profession will follow with great interest the further evolution of the situation.

5. Tzanck, A.: Traitement arsenical massif de la syphilis (par instillation goutte à goutte). Son intérêt prophylactique, *Bull. Acad. de méd., Paris* 119:257 (March 1) 1938. Tzanck, A.; Dupernet, R., and Lewi, S.: Le traitement novarsenical massif par instillation intraveineuse goutte à goutte, *Bull. et mém. Soc. méd. d. hôp. de Paris* 54:268 (Feb. 21) 1938.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, SEPTEMBER 7, 1940

THE PLATFORM OF THE AMERICAN MEDICAL ASSOCIATION

The American Medical Association advocates:

1. The establishment of an agency of the federal government under which shall be coordinated and administered all medical and health functions of the federal government exclusive of those of the Army and Navy.
2. The allotment of such funds as the Congress may make available to any state in actual need, for the prevention of disease, the promotion of health and the care of the sick on proof of such need.
3. The principle that the care of the public health and the provision of medical service to the sick is primarily a local responsibility.
4. The development of a mechanism for meeting the needs of expansion of preventive medical services with local determination of needs and local control of administration.
5. The extension of medical care for the indigent and the medically indigent with local determination of needs and local control of administration.
6. In the extension of medical services to all the people, the utmost utilization of qualified medical and hospital facilities already established.
7. The continued development of the private practice of medicine, subject to such changes as may be necessary to maintain the quality of medical services and to increase their availability.
8. Expansion of public health and medical services consistent with the American system of democracy.

INFLUENCE OF A PUBLIC HEALTH PROGRAM ON A RURAL COMMUNITY

Fifteen years ago the Commonwealth Fund, together with local and state government agencies, established a demonstration of rural public health work in Rutherford County, Tenn. At about the same time other health demonstrations were begun in other areas. Many of these demonstrations have lapsed. Some of the communities in which they function are not noted for the present quality or completeness of their public health services. Not so with Rutherford County. The work there has been continuous though unspectacular. It has been supported by local funds, which at the peak in 1929 accounted for approximately 85 cents out of a total per capita cost of \$1.20; in 1933, the lowest point since the peak, such funds accounted for approximately 55 cents out of an annual expenditure of 90 cents per capita. The remainder has come from state funds and other contributions, largely from the Commonwealth Fund.

A booklet¹ now published by the Commonwealth Fund reviews fifteen years of public health work in Rutherford County. Syphilis has increased 100 per cent in cases reported in the five year period 1934-1938 as compared with the period 1924-1928; the increase in gonorrhea reported in the same length of time has been almost 700 per cent. The syphilis clinics are crowded. Of the persons under treatment 73.6 per cent have had at least twenty treatments of arsenic and twenty of a heavy metal in the last year. Although a considerable number of lapses in treatment occur, the health department nursing staff succeeds in returning a high percentage for further treatment.

One of the paradoxical developments which indicate the necessity for caution in evaluating the effect of public health measures is that in Rutherford County, with a preschool population of which 65 per cent has been immunized against diphtheria, the disease has declined less rapidly than in four adjoining unorganized counties² in the period 1927-1938. In general, however, a comparison of Rutherford County with these four adjoining counties and with the state of Tennessee is favorable. For example, the death rate in the five year period 1934-1938 for typhoid was 1.8 for Rutherford County, 16.0 for the adjoining counties and 5.5 for the state. Other rates were as follows:

	Rutherford County	Unorganized Counties	State of Tennessee
Measles	3.7	6.1	5.4
Influenza and pneumonia....	119.6	161.6	139.9
Diarrhea and enteritis under 2 years	14.2	20.8	21.1
Stillbirths	33.5	43.9	38.6
Infant deaths	43.6	61.2	64.4
Maternal deaths	4.4	6.3	6.1

For scarlet fever the situation is reversed, with a death rate of 2.5 in Rutherford County as compared with 1.0 for adjoining counties and 1.1 for the state. The tuberculosis death rate of 87.6 is practically identical with that for the state, whereas in the adjoining counties the corresponding rate is 100.3.

Among the significant features of the Rutherford County program is its contribution to the training of public health personnel. It has been used as a public health laboratory, having trained in its last ten years a total of 518 undergraduate medical students, 101 practicing physicians and eighty-three physicians in public health work. At the same time it has trained in public health 137 undergraduate nurses and 112 graduate nurses. Three sanitary inspectors have been given postgraduate instruction.

This work shows what can be done in a more or less typical Southern rural county by enlisting available local and state facilities plus outside help. The outside aid has been given with wisdom and discretion, as indicated by the high percentage of reliance on local

1. Walker, W. F., and Randolph, Carolina R.: *Influence of a Public Health Program on a Rural Community*, New York, Commonwealth Fund, 1940.

2. Bedford, Cannon, Coffee and Marshall.

funds. Supplementing the outside financial aid, of course, has been the technical advice available from the expert consultants of the Commonwealth Fund and those whom they have called to their assistance. The report reflects throughout a state of excellent cooperation between medical facilities in the community and the public health service. The Rutherford County demonstration has continued for fifteen years and is no longer in the demonstration phase but is an integral part of the community life; it is periodically evaluated by competent and objective experts; no excessively optimistic claims are made for it. This project has, moreover, made a significant contribution to the solution of one of the most important problems in public health today: the training of specialized personnel.

ALLOTMENT OF FEDERAL FUNDS FOR VENEREAL DISEASE CONTROL

The Surgeon General of the United States Public Health Service, with the approval of the Federal Security Administrator, has recently issued regulations under which federal funds for carrying out the Venereal Disease Control Act are to be distributed for the fiscal year 1941.¹ Federal grants-in-aid totaling \$5,672,388, or 88.8 per cent of the \$6,200,000 appropriated,² will be allotted, compared to \$4,379,250 which was allotted for 1940.³ Allotments amounting to 26.7 per cent of the money available will be made to the states in the ratio in which the population of each state bears to the population of the United States as shown by the Census Bureau 1937 midyear population estimates. Allotments amounting to 35.3 per cent of the available amount will be made to the states on the basis of (1) the varying composite geographic and racial prevalence rate for syphilis, (2) the varying costs of providing "equal services," (3) the need for training centers and demonstrations in selected areas and (4) the need for facilities to prevent and control venereal diseases in localities where armed forces or civilian employees engaged in national defense activities are concentrated. Allotments amounting to 26.7 per cent of the available appropriation will be made to the states on the basis of financial need, which is determined to be the ability of the state to raise revenue expressed indirectly in terms of differences in per capita income. A state, to be eligible to receive a grant-in-aid, must submit to the Surgeon General (a) a comprehensive statement of its existing venereal disease control organization, program and budget; (b) a proposed plan for improving the service of its venereal disease control unit including provision for a merit system of personnel administration, provided that the state agency may exempt, among other persons, all part time professional persons not engaged in the performance of administrative duties who are paid for any form of medical, nursing or other professional service and who

meet the standards of training and experience established by the responsible state authority; (c) specific plans for the control of gonorrhea; (d) a proposed plan for extending and improving district, county and city venereal disease control services for both gonorrhea and syphilis, and (e) a statement indicating the ways in which the proposed expenditure of federal funds may be expected to stimulate permanent progress in the prevention and control of venereal diseases in both urban and rural areas. In its plan a state may provide for training, for a period not to exceed one year, professional and technical personnel so as to qualify them to conduct venereal disease control work effectively, provided the funds used for this purpose and the scientific personnel nominated for training are first approved by the Surgeon General. Expenditures can be made only for the purposes specified in budgets approved by the state health officer and the Surgeon General. The state health officers of states receiving grants-in-aid are required to make quarterly and annual financial reports to the Surgeon General and to submit to him certain progress reports, including a semiannual report on the status of venereal disease control activities in the state, a monthly clinic report for each clinic treating venereal diseases, a monthly state morbidity report and a monthly city morbidity report for each city with a population of 200,000 or over.

As announced in the regulations, a state or territorial plan to be acceptable must make available minimal services for the control of venereal diseases which are substantially in accord with the standards that are prescribed. Any laboratory, state or otherwise, receiving federal funds must demonstrate by a suitable method that the serologic tests performed have a satisfactory sensitivity and specificity rating and it must provide laboratory services for venereal diseases on the same basis as it does for other communicable diseases. Free diagnostic and treatment facilities for both syphilis and gonorrhea must be provided, by all health departments or clinics receiving federal funds, for (1) the diagnosis and emergency treatment of all patients who apply, (2) all patients referred by a private physician either for continued treatment or for consultative advice and opinion, and (3) all patients unable to afford private medical care, provided:

That in communities where other adequate facilities for the diagnosis and treatment of gonorrhea or syphilis are available, funds may be reallocated in the discretion of the state health officer independently to the gonorrhea or syphilis departments of polyclinics in order to provide complete clinical service.

The ability of a patient to pay for private medical care is to be determined by the state or local health department or by welfare agencies. Antisypilitic drugs must be distributed free on the request of any physician duly authorized by law to administer such drugs. Diagnostic and treatment services must be as freely available to infected residents of other states and counties as to people who reside in the governmental unit providing the services. The services of a properly qualified full-

1. 5 Federal Register 2391.

2. Public No. 665, 76th Congress.

3. 4 Federal Register 2163.

time venereal disease control officer must be provided in each state and in each municipality if the population of either exceeds 500,000 on the basis of the 1930 census. In reallocating funds for local venereal disease control services the state health officer is required to give due consideration to the relatively higher prevalence of syphilis and gonorrhea in urban areas.

In general these regulations differ but little from those promulgated for venereal disease control for the fiscal year 1940.³ The new regulations, however, allot to the several states and the territories for the fiscal year 1941 federal grants-in-aid exceeding by over \$1,290,000 those allotted for the fiscal year 1940. The only provisions in the new regulations not contained in the prior regulations which are of particular interest to the medical profession are those set forth relating to the establishment of state merit systems of personnel administration and the proviso, as quoted, qualifying the furnishing free of facilities for diagnosis and treatment to all patients unable to afford private medical care for venereal diseases.

POISON IVY DERMATITIS

Rhus poisoning, the active principle of which is the complex radical urushiol, ranks highest among the causes of plant dermatoses and constitutes an occupational hazard for horticulturists, farmers and those engaged in clearing land, not to mention the infection of carefree ramblers in the woods. Though many efficacious methods exist for treating the eruption after it has occurred, little has been accomplished for prophylaxis. Potassium permanganate and ferric chloride discolor and pigment the skin; desensitizing injections of ascending doses of rhus toxin seem to be impracticable, if large numbers of field workers are involved.

An alkaline vanishing cream containing a nonirritant, nonstaining oxidizing agent such as sodium perborate or potassium periodate is now recommended¹ as an effective preventive against poison ivy dermatitis. By incorporating either of these drugs in an ointment and applying it to the skin of the arms and the face before exposure, even those who are previously ascertained to be highly susceptible may be effectively protected. Preliminary tests on a limited number of volunteers with a 10 per cent sodium perborate ointment, to which a poison ivy extract of well known manufacture representing a concentration fifteen times greater than that of the toxin in the fresh leaf was applied, failed to elicit reactions. Only a slight erythema, about one fourth of an inch in diameter, manifested itself at the site of application in one member of the group who was most susceptible to the reaction. Other tests made to determine the respective participation of the alkali and the oxidizing agent in the detoxicant action on rhus poison showed that the irritant principle of poison ivy was inactivated by the oxidant.

After satisfactory performance in the laboratory, the prophylactic cream was tested by actual contact and

handling of poison ivy foliage. The hands and right forearms of two of the group, including the most allergic subject, were anointed with the preparation and they were set to plucking poison ivy leaves growing around a tree. In addition, the leaves were pressed against the cream-protected areas of their forearms, brushed up and down against them and allowed to remain as long as half an hour in contact. An hour later the cream was washed off with soap and water. Reactions did not occur despite the fact that the more susceptible of the two had contracted a linear vesicular eruption on an unprotected area of his arm from accidental contact with poison ivy while undergoing the test.

The United States Public Health Service, which developed this technic, recommends that vanishing creams containing oxidizing agents such as those referred to be prepared for use at least every two weeks to avoid deterioration. They should be rubbed well into the skin of the arms and face before each exposure. Soap and water used to remove the deposit of the powdered oxidant on the skin will emulsify it and wash away whatever toxins are lodged in the pores or on the skin.

Current Comment

MEDICAL APPLICATIONS OF "ATOM SMASHING"

Radioactivity has already contributed enormously to medical progress. Now it seems rational to believe that the consequences of "atom smashing" may further affect medicine in numerous ways. As pointed out by Solomon,¹ the new radioactive elements cannot be administered to human beings just as they come from the cyclotron or from any other atom smasher but must first be purified and then synthesized into some compound which is easily taken into the body. The possibilities of use, however, are illustrated by the fact that of the ninety-two known stable elements eighty-seven may be made radioactive artificially. Furthermore, they possess half-lives which are short in comparison with that of radium. Thus the intensity of radiation of radioactive phosphorus, for example, diminishes by half in the course of fourteen days. Obviously if some substance such as radioactive phosphorus proves to be therapeutically effective in any disease, its rapid decrease in activity would make its internal administration far less dangerous than that of radium. The most encouraging results in the application of such radioactive elements have been produced in the treatment of leukemia: one patient is reported to have been kept alive by the administration of radioactive phosphorus after x-ray treatment could no longer be applied. Although such observations are far too few from which to draw conclusions, the possibilities of administering radioactive substances without the attendant dangers of radium and x-rays are encouraging. The further pursuit of such therapeutic objectives is the combined problem of scientists working in many different fields.

1. Schwartz Louis; Warren, L. H., and Goldman, F. H.: Protective Ointment for the Prevention of Poison Ivy Dermatitis, Pub. Health Rep. 55:1327 (July 26) 1940.

1. Solomon, A. K.: Why Smash Atoms? Cambridge, Mass., Harvard University Press, 1940.

FIVE DAY TREATMENT OF
EARLY SYPHILIS

Elsewhere in this issue of THE JOURNAL appears a report by the Council on Pharmacy and Chemistry of the American Medical Association relative to the so-called five day treatment for early syphilis. This treatment developed from the observation by Hirshfeld, Hyman and Wanger¹ that numerous chemical compounds could be safely administered to animals and human beings in amounts far exceeding the usual toxic doses by a slow continuous intravenous drip injection of dilute solutions. This manuscript was first made available in 1931. Since 1933 a considerable number of papers have appeared dealing with this technic as applied to the treatment of early syphilis by a group of workers² at the Mount Sinai Hospital of New York. A number of manuscripts have been read since that date before various meetings. Obviously there are considerable advantages in any method of treatment of syphilis which can be completed in a brief period of time, so that the results, if even approximately comparable to those obtainable with systems of treatment requiring months or years, are likely to bespeak for such a method the most favorable consideration. However, there must be borne in mind as well the fact that the employment of remedies with such a technic involves a certain amount of risk and that the risk with drugs of the type of neoarsphenamine and mapharsen is far greater than that with less toxic preparations. There seems to be a chance equivalent to about one in a hundred that patients treated with this technic with either drug may develop in a more or less severe form one of the most serious of all arsenical reactions—hemorrhagic encephalitis. This risk seems to be far greater with this method of treatment than with the conventional use of divided doses. Moreover, in patients treated by this technic, peripheral neuritis was encountered in 35 per cent of patients given neoarsphenamine and in 1.7 per cent of those given mapharsen by the intravenous drip method. Fevers and toxicodermas also occurred. Obviously, many more studies will need to be made both of patients under controlled conditions in hospitals and of animals in the laboratory to establish definite criteria for the use of this new technic. The method is still in an experimental stage. Its importance cannot be gainsaid, and the possibility of great advances in the practical treatment of syphilis by this or a similar technic is so important that it is to be hoped that research will be expanded and intensified so as to yield positive conclusions at the earliest possible moment.

1. Hirshfeld, Sam; Hyman, H. T., and Wanger, Justine J.: Influence of Velocity on the Response to Intravenous Injections, *Arch. Int. Med.* **47**: 259 (Feb.) 1931.

2. Chargin, Louis; Leifer, William, and Hyman, H. T.: The Application of the Intravenous Drip Method to Chemotherapy as Illustrated by Massive Doses of Arsphenamine in the Treatment of Early Syphilis, *J. A. M. A.* **104**: 878 (March 16) 1933. Hyman, H. T.; Chargin, Louis, and Leifer, William: Massive Dose Arsenotherapy of Syphilis by the Intravenous Drip Method (Five Year Observations), *Am. J. M. Sc.* **107**: 480 (April) 1939. Hyman, H. T.; Chargin, Louis; Rice, J. L., and Leifer, William: Massive Dose Chemotherapy of Early Syphilis by the Intravenous Drip Method, *J. A. M. A.* **113**: 1268 (Sept. 23) 1939. Hyman, H. T.; Chargin, Louis, and Leifer, William: Massive Dose Arsenotherapy of Syphilis by the Intravenous Drip Method, *Am. J. Syph., Gen. & Ven. Dis.* **23**: 685 (Nov.) 1939.

VITAMIN C IN STRAWBERRIES AND
CABBAGES

Newer data on the vitamin C content of fresh fruits and vegetables reveal that many of these foods are even richer sources of the antiscorbutic factor than any one had supposed. The luscious strawberry and the humble cabbage now are found to rank with citrus fruits as foods which can provide in a single serving enough vitamin C to meet the daily requirement for this dietary essential. Such observations have been made possible by the perfection of chemical methods for the rapid determination of vitamin C in biologic materials. The use of chemical methods for the estimation of ascorbic acid has proceeded from the biochemical research laboratories to many other fields. Some members of the canning industries find that it is advantageous to check in a routine manner the vitamin C content of products such as canned tomato juice, long recognized as an important source of vitamin C. A recent commendable trend has been the investigation of the vitamin C content of different varieties of tomatoes, oranges and other important sources of vitamin C. Satterfield and Yarbrough¹ determined the ascorbic acid content of several varieties of strawberries produced under nearly identical conditions. They report considerable variation, but all varieties of the strawberry may be considered to be rich sources of vitamin C. They found on the average from 36 to 65 mg. of ascorbic acid to each hundred grams of fresh berries. Burrell, Brown and Ebright² likewise report considerable variation in the ascorbic acid content of thirty-one varieties of cabbage. The lowest average value reported was 48 mg. for each hundred grams of fresh cabbage and the highest was 181. From these studies it may be concluded that, to supply a fairly liberal daily allowance of vitamin C, equivalent to 1,000 units or 50 mg. of ascorbic acid, it would be necessary to consume only from 77 to 138 Gm. of strawberries (about 3 to 5 ounces) or from 28 to 104 Gm. of fresh cabbage (about 1 to 4 ounces). Many other foods, such as potatoes, spinach and turnips, contain large amounts of vitamin C, so that it is not surprising to note that little evidence of vitamin C deficiency has been observed among the adult population of the United States. The vitamin C requirements of the adult may be supplied by a small portion of coleslaw or by about thirty strawberries. The time may come when foods will have to be selected for their contribution of dietary essentials. It will be necessary to know not only the relative amounts of ascorbic acid in different foods but also the contribution which different varieties of each food may make and the effects of processing, storage, cooking and perhaps even environmental conditions during the growing season. Agricultural economists may well begin now to give attention to the amount of vitamin C produced in calculating the yield of certain crops to the acre.

1. Satterfield, G. Howard, and Yarbrough, Mary: Varietal Differences in Ascorbic Acid (Vitamin C) Content of Strawberries, *Food Research* **5**: 241 (May-June) 1940.

2. Burrell, R. C.; Brown, H. D., and Ebright, Virginia R.: Ascorbic Acid Content of Cabbage as Influenced by Variety, Season and Soil Fertility, *Food Research* **5**: 247 (May-June) 1940.

MEDICAL PREPAREDNESS

In this section of The Journal each week will appear official notices by the Committee on Medical Preparedness of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medical preparedness, and such other information and announcements as will be useful to the medical profession.

PHYSICAL THERAPY IN THE MILITARY SERVICE

JOHN S. COULTER, M.D.

Chicago

In considering the place of physical therapy in the army during a war it is interesting to summarize a general description of the medical service in the theater of operations, the zone of communications and the zone of the interior. This summary will show that in the present duties and relations of the medical service there is no provision for physical therapy except in the zone of communications and the zone of the interior. The general mission of the medical service is:

(a) The preservation of the strength of the forces in the field.

(b) The care and treatment of the sick and injured men so that casualties may be more promptly returned to duty.

The specific duties of the medical service are:

(a) The initiation of sanitary measures to insure the health of the troops.

(b) The care of sick and wounded men in camp, on the march, on the battlefield and after removal therefrom.

(c) The methodical disposition of sick and wounded so as to insure the retention with the fighting forces of effectives and to relieve it of noneffectives.

(d) The transportation of sick and injured.

(e) The establishment and operation of hospitals, dispensaries and other installation necessary for the care of sick and injured.

(f) The supply of material necessary for the prevention of disease among troops and for the care of the sick and injured.

(g) The preparation and preservation of records of sickness and injury for the immediate information of higher authority, and assistance in the adjudication of claims with justice both to the government and to the individual.

(h) The direction and supervision of all public health measures among the inhabitants of occupied territory.

One of the assigned duties of the Medical Department is the evacuation of the sick and wounded in all theaters of operations. The difficulties and magnitude which this task may assume should be understood by all concerned. In the operation of a large force against strong resistance, as much as one fifth of the troops may have to be evacuated from the combat zone to the communications zone in a relatively short period. This movement of noneffectives from the combat zone is properly conceived as being in the nature of a withdrawal. Its execution is a responsibility of the medical service. The evacuees are unorganized, are non-self supporting and are gathered individually from all units of the field forces. They require individual care, treat-

ment and handling through all the stages of their withdrawal from points in the forward area to the hospitals of the communications zone.

The present Regular Army division, sometimes called the Streamline and also the Triangular Division, has a medical battalion instead of a medical regiment. The medical battalion has in general a similar organization to that of a regiment. It requires less personnel, since the Regular Army division now has a strength of approximately 12,500 instead of the former 20,000.

In battle the medical regiment completes the division medical service by evacuating battalion and regimental aid stations to collecting stations (and when necessary clearing the field of wounded) by its collecting battalion. The ambulance battalion transports the sick and wounded from the collecting stations, or from points farther to the front, to the clearing station. The hospital battalion establishes and operates the clearing station, sorting, treating and otherwise preparing the patients for return to their units or for evacuation out of the division area.

Ordinarily there are assigned to one field army, in addition to other units, eight surgical hospitals, ten evacuation hospitals and one convalescent hospital.

SURGICAL, EVACUATION AND CONVALESCENT HOSPITALS

A surgical hospital is designed for the initial care of the so-called nontransportable wounded; that is, those wounded whose condition is so serious as not to permit of their immediate removal from a clearing station to an evacuation hospital.

The evacuation hospital has a normal capacity of 750 beds and receives its patients from the clearing stations and surgical hospitals established in the combat zone. Evacuation hospitals are primarily for use during battle, but they may also be established to receive sick and injured from concentration or rest centers and from large marching columns when station hospitals or general hospitals are not available for this purpose. When battle is imminent, evacuation hospitals in sufficient number to meet expected needs (usually about one for each front line division) are located and opened.

The convalescent hospital has a capacity of 3,000 beds and is designed for slightly ill and convalescent patients. It plays an important role in the conservation of the troop strength of the combat zone.

The surgical, evacuation and convalescent hospitals are all in the theater of operations. One of the most important duties of the medical department is the evacuation of the sick and wounded in all theaters of operations. The medical facilities and services in the theater of operations are such that physical therapy cannot be started in the hospitals of this zone of operations.

THE GENERAL HOSPITAL

In the communications zone the most important hospital unit is the general hospital. In a communications zone with six field armies in the theater of oper-

ations there would be authorized 300 general hospitals for the communications zone. The number of general hospitals allotted to the communications zone would depend on the location of the communications zone in relation to the zone of the interior, the extent of the zone and the number of troops involved. Under certain conditions there may be no need for general hospitals in the communications zone, while under other conditions, such as with an oversea expeditionary force, a large number may be required.

The general hospital is a fixed unit of 1,000 beds capacity, designed for the treatment of all cases arising within the theater of operations and located a sufficient distance from the combat zone so that military reverses will not disturb their operation. Its equipment is adequate for the care of all cases of whatever severity. Although designed for the definitive treatment of cases, it will be necessary in a prolonged campaign to evacuate patients from these general hospitals to general hospitals in the zone of the interior, especially those who are not likely to be fit for service for a considerable time or who will be incapacitated permanently for further military duty.

General hospitals should be located at points which afford good rail or water connection with regulating stations and with the zone of the interior. The presence of suitable buildings and utilities is most advantageous, but additional construction will usually be required. In planning construction, consideration should be given to the availability of near-by landing fields for airplane ambulances.

General hospitals, when conditions permit, are organized into groups of from three to ten. This group is called a hospital center. Each hospital center contains a convalescent camp, which normally will have a bed capacity equivalent to 20 per cent of that of the center. Patients who no longer require careful hospital treatment but who are not yet fit for duty will be transferred to this camp, where they are prepared for duty by a system of graduated exercises.

PHYSICAL THERAPY

As the equipment of a general hospital should be adequate for the care of all cases of whatever nature or severity, it is here that physical therapy should be started in the care of many fractures, dislocations, wounds and amputations. In individuals suffering from trauma, physical therapy is most effective if started early in the general hospitals of the zone of communications and continued in the general hospitals of the zone of the interior. In the First World War physical therapy was started in the general hospitals and hospital centers of the army of the United States in France and was most effective in reducing the length of temporary disability and the amount of permanent disability.

The Surgeon General of the Army recently stated that it would be the policy of the Medical Department of the Army in the next war to discharge all wounded men requiring prolonged hospitalization to the Veterans' Administration for treatment in its hospitals. This would mean that the care of cases requiring long hospitalization by the Veterans' Bureau would lessen the number of army general hospitals in the zone of the interior. At the same time this would not lessen the number of wounded in the country which require physical therapy.

In any event an estimate of 300 general hospitals of 1,000 beds each for six field armies in a war of such

severity as is occurring in Europe would not seem to be excessive. Proportionately, in comparison with civil hospitals with the same number of beds an army general hospital physical therapy department will need a medical director and at least six physical therapy technicians.

The Committee on Medical Preparedness of the American Medical Association recently sent to each physician in the United States a questionnaire about service in the Army, Navy or Public Health Service during an emergency. The questions about special medical societies and specialists follows the listing in the American Medical Directory. Therefore under question 68: "Are you a member of any special medical societies?" physical therapy is not listed but there is a place where physicians specializing in physical therapy can insert "Society of Physical Therapy Physicians."

Under questions 60 to 63 physical therapy is not listed, but it can be added under 60:6, and question 75 and 76 "Service you consider yourself best qualified to perform" can be answered by those physicians specializing in the subject of physical therapy. The committee is listing physical therapy physicians as a group.

It is not surprising that physical therapy is not listed as a specialty. In 1938 a group of physicians interested in physical therapy organized a special society for physicians specializing in physical therapy, The Society of Physical Therapy Physicians. The requirements for membership in this society are that members "shall have been engaged in the practice of physical therapy for at least five years" and "shall have given evidence of satisfactory scientific attainments."

In 1940 this society has a membership of thirty-eight and a waiting list of ten. Therefore the American Medical Association is justified in not listing physical therapy as a specialty. There are other subjects not listed, such as allergy and cardiology.

For these and other reasons it should be clear that there is a shortage of at least 250 physicians qualified to take charge of physical therapy departments in a general hospital of 1,000 beds.

The Northwestern University Medical School for the last ten years has been offering to qualified graduate physicians a month's course in physical therapy. It is felt that this course serves as a substantial foundation for the intelligent application of physical therapy. The instruction consists of lectures on the physical and therapeutic principles of the physical agents and their physiologic effects, the observation of patients, the preparation of physical therapeutic prescriptions, the demonstration of technic, the attendance at clinics and the actual treatment of patients under supervision. Such a course established at many other medical schools where there is a qualified physician in charge of the physical therapy department could give the necessary basic training to physicians to be assigned to physical therapy departments of general hospitals which are to serve the military establishment.

A physician with a year's internship and at least a year's approved residency can in this month's course secure a groundwork in physical therapy that will enable him in the event of an emergency to take charge of the physical therapy department of an army general hospital. This course has been given for the last ten years. Physicians completing this course have taken charge of the physical therapy departments of twelve medical schools in the United States. With this experience it is believed that this length of a course will serve

during an emergency. It would seem desirable that some provision be made to train medical officers in such short courses as the need arises. At least ten medical schools and the Mayo Clinic have facilities to give such courses as described.

The shortage of physical therapy technicians is even more acute. At present there are 1,029 senior registered physical therapy technicians on the roster of the American Registry for Physical Therapy Technicians. The American Physiotherapy Association has a membership of 1,017. About 75 per cent of the American Registry for Physical Therapy Technicians are included in the membership of the American Physiotherapy Association. There are therefore about 1,274 trained physical therapy technicians in the United States. These technicians are all employed in hospitals, private offices or schools for crippled children or in the state program services for crippled children, sponsored by the Crippled Children's Division of the Children's Bureau of the Department of Labor.

It would be a great mistake to lower the educational standards for physical therapy technicians. This need not be done if training is started at once. The minimum curriculum as given by the Council on Medical Education and Hospitals of the American Medical Association requires 1,200 hours. It is believed that the 400 hours required for clinical practice could be given in the approved school for physical therapy technicians or in a hospital physical therapy department in charge of a senior registered physical therapy technician. Therefore a course could be given at an approved school of forty hours a week for twenty weeks provided the 400 hours of clinical practice was given under the direction of a senior registered physical therapy technician. This class of technicians could start in all the approved schools by Jan. 1, 1941. The class could finish at the schools in twenty weeks if necessary and take the 400 hours of practice in the physical therapy department of an army general hospital or continue the practice hours in the school if an emergency does not exist.

In the event of a national emergency, the time element is important. Therefore it would seem necessary to formulate definite plans now to meet any essential demand for medical services either to the civilian population or to the armed forces.

122 South Michigan Avenue.

COMMITTEE TO COORDINATE MINNESOTA'S DEFENSE EFFORTS

An all-university committee appointed to coordinate the efforts of the University of Minnesota to cooperate in national defense has been appointed with Dr. Harold S. Diehl, dean of medical sciences at the university, as chairman. The defense efforts of the university at present include (1) organization of the United States General Hospital No. 26, (2) training men in the naval R. O. T. C.; (3) participating in the civil aeronautics authority flight program, (4) pushing two medical school research projects, one of which is concentrated on surgery and the other on human fatigue and (5) the lending of Elvin B. Stakman, Ph.D., to a government expedition to South America to study the possibility of expanding rubber production. The University of Minnesota also is one of four universities selected to assist in studies of the impact of the preparedness and defense program on business.

Organization Section

OFFICIAL NOTES

ADDRESSES BY OFFICIAL STAFF

DR. PAUL C. BARTON:

September 11—Meeting of the Second District of the Medical Society of Wisconsin, Lake Geneva, Wis.

DR. W. W. BAUER:

October 5.—La Porte County Public School Teachers Meeting, La Porte, Ind.

DR. PAUL A. TESCHNER:

September 30—Chicago Tuberculosis Institute at University Clinics, Chicago.

October 3—Interprofessional Men's Institute, St. Paul.

October 4—Mississippi Valley Conference on Tuberculosis, St. Paul.

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Changes in Status.—S. J. Res. 286, previously passed by the Senate and the House with amendments, has been reported out of conference and the report of the conferees adopted by the Senate and the House, authorizing the President, during the period ending June 30, 1942, to order into active military service, in the Western Hemisphere and in the territories and possessions of the United States, for a period of one year, retired personnel of the Regular Army and any or all members and units of any or all reserve components of the Army. S. 4203 has been reported to the Senate with amendments, providing that in the discretion of the President retired officers, warrant officers, nurses and enlisted men of the Regular Army may be employed or assigned to active duty, with their consent in time of peace but with or without their consent in time of war. S. 4224 has been reported to the Senate with amendment, providing that in time of war or during an emergency declared by the President or by Congress the Secretary of War may, in his discretion, dispense with any part of the examination for promotion in the Regular Army of officers of the Medical, Dental and Veterinary Corps, except the physical examination. S. 4245 has been reported to the Senate without amendment, proposing to authorize the Secretary of the Navy to establish naval hospitals at the naval air stations at Jacksonville, Fla., and San Juan, Puerto Rico; the submarine base, Coco Solo, Canal Zone; the naval station, Guantanamo Bay, Cuba, and the Marine Barracks, Quantico, Va. H. R. 8613 has passed the House without amendment, providing that any person who served as a member of the Army Nurse Corps or of the Navy Nurse Corps during the World War and continuously thereafter until May 13, 1926, and who was, prior to June 20, 1930, separated from said corps by reason of physical disability incurred in line of duty, shall, on her application therefor, be entitled to be placed on the retired list of the Nurse Corps of which she was a member, her retired pay becoming effective on the date of receipt by the Secretary of War or the Secretary of the Navy, as the case may be, of such application or the date of enactment of this bill, whichever is later.

Bills Introduced.—H. R. 10382, introduced by Representative Boykin, Alabama, proposes to grant permanent total disability rating to World War veterans suffering service connected tuberculosis disability if such disease remains active after two years' hospitalization and is not expected to become arrested by further hospitalization. H. R. 10384, introduced by Representative McCormack, Massachusetts, proposes to amend the Social Security Act and the Internal Revenue Code so as to extend old age and survivor insurance benefits and unemployment benefits to, among others, employees of nonprofit religious, charitable, scientific, educational and anticruelty organizations, except ordained ministers and members of religious orders performing their duties in such orders and student nurses and interns.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Health Department Headquarters Transferred to Los Angeles.—Newspapers reported, July 17, that the headquarters of the state department of health had been transferred to Los Angeles. Alterations have been approved for the Los Angeles office to accommodate Dr. Bertram P. Brown, Los Angeles, recently appointed director of the department, and his staff, it was stated.

Medical School Center in Pediatric and Obstetric Program.—The University of California Medical School, San Francisco, will be the center of all postgraduate education in pediatrics and obstetrics in a long term educational program planned by six cooperating states: California, Nevada, Utah, Idaho, New Mexico and Arizona. According to the university *Clip Sheet*, the program will be financed by funds from the participating states, the U. S. Children's Bureau and the Rosenberg Foundation. Selected physicians from each state will attend refresher courses offered by the university. Transportation and tuition will be paid by the home states. In addition, a pediatric "circuit rider" will be appointed to travel through the western states for consultations with individual physicians, district medical societies and other interested groups on problems involving the care of young children. Dr. Amos U. Christie, associate professor of pediatrics at the university, will direct the program.

CONNECTICUT

Personal.—Dr. Benjamin G. Horning has resigned as health officer of Hartford to become associate field director of the American Public Health Association for the United States and Canada, according to the state medical journal. Dr. Horning has been health officer of Hartford for four years. He graduated at Harvard Medical School, Boston, in 1928.—Dr. Ross G. Harrison, Sterling professor of biology emeritus, Yale University School of Medicine, New Haven, received the honorary degree of doctor of science from Columbia University at the recent commencement.

Sixteenth Annual Clinical Congress.—The Connecticut State Medical Society will hold its sixteenth clinical congress in New Haven, September 17-19. The following will participate:

- Dr. Elliott P. Joslin, Boston, Newer Developments in the Treatment of Diabetes.
- Dr. Nicholson J. Eastman, Baltimore, Complications of Pregnancy.
- Dr. Herrman L. Blumgart, Boston, Treatment of Coronary Artery Diseases.
- Dr. Grover F. Powers, New Haven, Chemotherapy of Streptococcus Empyema.
- Dr. Howard W. Brayton, Hartford, Use of Vitamin K in Hemorrhagic Diseases of the Newborn.
- Dr. James D. Trask, New Haven, Diagnosis of Pneumococcus Types from Nasal Washings.
- Dr. Eugen Kahn, New Haven, Contraindications to Marriage from the Psychiatric Viewpoint.
- Dr. James Flexner, New York, What We Can Learn from Gastroscopy.
- Dr. Wilder G. Penfield, Montreal, The Epilepsies.
- Dr. Martin Henry Dawson, New York, Treatment of Chronic Arthritis with Special Reference to the Use of Gold Salt.
- Dr. Alvan L. Barach, New York, Gas Inhalation Therapy.
- Dr. Frank R. Ober, Boston, Significance of Low Back Pain.
- Dr. Clarence D. Selby, Detroit, An Approach to the Problems of Adult Life Through Industry.

DELAWARE

State Medical Meeting September 9-11.—The Medical Society of Delaware will hold its one hundred and fifty-first annual session at the Henlopen Hotel, Rehoboth Beach, September 9-11, under the presidency of Dr. Bruce Barnes, Seaford. Included among the speakers are:

- Dr. Emil Novak, Baltimore, Some Endocrine Aspects of Gynecology.
- Dr. James E. Marvel, Laurel, Otitis Media.
- Dr. John A. Kelmer, Philadelphia, The Present Status of Vaccination Against Diphtheria.
- Dr. George C. Griffith, Philadelphia, The Significance of Precordial Pain.
- Dr. Ernest L. Stebbins, Albany, N. Y., Streptococcal Infections.
- Dr. Edward Weiss, Philadelphia, Renal Aspects of Hypertension.
- Dr. Carl H. Davis, Wilmington, Complicated Labor.
- Dr. Joseph B. Wolfe, Philadelphia, Atheromatous Cardiovascular Disease.

GEORGIA

Personal.—Dr. Harold W. Long, Milledgeville, has been appointed director of the crippled children's division of the state department of public welfare. He is a graduate of the University of Georgia School of Medicine, Augusta, class of 1936.

Anatomist Accepts Fellowship at North Carolina.—Dr. Charles W. Harwell, since 1921 a member of the staff of Emory University School of Medicine and since 1923 assistant professor of micro-anatomy and neuro-anatomy, has resigned to accept a fellowship in public health at the University of North Carolina. Dr. Harwell graduated at Emory in 1921.

District Meeting.—The First District Medical Society was addressed in Savannah, July 17, among others, by:

- Dr. Patrick H. Smith, Savannah, Regional Anesthesia.
- Dr. Louis Fielding Lanier, Sylvania, Coronary Thrombosis with Diabetes.
- Dr. Elton S. Osborne, Savannah, Psychoanalysis and Medical Psychology.
- Dr. Lee Howard, Savannah, The Practical Importance of Certain Drug Blood Levels.
- Dr. Henry T. Compton, Savannah, The Septic Hip.

Dr. Job C. Patterson, Cutlibert, president of the state medical association, also addressed the meeting.

IDAHO

Bubonic Plague.—*Public Health Reports* announces the diagnosis of bubonic plague in a boy aged 13 years at Emmett, Gem County. The diagnosis was made by Surg. LeGrand B. Byington of the Public Health Service Plague Suppressive Measures Laboratory in San Francisco.

Society News.—The state medical association sponsored a lecture tour which included a dinner meeting with the Pocatello Medical Society, July 13; South Side Medical Society in Twin Falls, July 14, and an evening meeting with the Southwestern Medical Society at Boise, July 15. The speakers were Drs. Constantine F. Kemper, associate professor of medicine, University of Colorado School of Medicine, Denver, whose subject was "Newer Procedures in Management of Ductless Gland Diseases," and Kenneth D. A. Allen, Denver, "Carcinoma of the Cervix."

ILLINOIS

Physicians Honored.—A dinner was held in Mason City recently, honoring Dr. Chauncey W. Cargill on his completion of fifty years in the practice of medicine. The dinner was given under the auspices of the Mason City Rotary Club and the Mason County Medical Society. A medal was presented to Dr. Cargill by the Illinois State Medical Society. A similar honor marked the fiftieth anniversary in medical practice of Dr. Jasper M. Adams. Dr. Adams has practiced thirty-seven years in Canton.

CHICAGO

Personal.—Dr. Gustavus M. Blech recently received the military surgeon's medal from the Mexican Ministry of National Defense in recognition of his publications on war surgery and medicomilitary problems.

Memorial to Dr. Fantus.—Plans are under way to place a plaque in the new outpatient clinic building at Cook County Hospital in honor of the late Dr. Bernard Fantus, for whom the clinic building was named. Those who wish to contribute to this memorial should send their checks to the Bernard Fantus Memorial Fund, care of Elizabeth M. Adles, department of therapeutics, Cook County Hospital, 1825 West Harrison Street. The new outpatient clinics of the hospital group were dedicated, April 19, to the memory of Dr. Fantus, director of therapeutics at the hospital and creator of the "blood bank" for quick transfusions.

KENTUCKY

State Medical Meeting at Lexington.—The annual meeting of the Kentucky State Medical Association will be held in Lexington, September 16-19, under the presidency of Dr. Austin Bell, Hopkinsville. Dr. Nathan B. Van Etten, New York, President of the American Medical Association, will deliver an address Tuesday evening, September 17, on "An American Health Program," and Dr. Arthur W. Allen, Boston, will speak on "Surgical Consideration of the Gallbladder and Bile Ducts." Wednesday evening at the annual dinner Dr. Bell will deliver his presidential address and Dr. Tinsley R. Harrison, Nashville, Tenn., will speak on "Management of Patients with Acute Myocardial Infarction." The annual oration in surgery will be delivered by Dr. Allen E. Grimes, Lexington,

on "Lung Abscess" and the oration in medicine by Dr. Oscar O. Miller, Louisville, on "The Evolution of Our Knowledge of Tuberculosis." Among other speakers will be:

- Dr. James R. Hendon, Louisville, An Evaluation of the Present Status of Male Hormone Therapy.
- Dr. Thomas J. Marshall, Paducah, Vitamins—Their Use in Children.
- Dr. Fred W. Rankin, Lexington, Indication of Surgery and Choice of Operation in Peptic Ulcers.
- Dr. Shelton Watkins, Louisville, Hoarseness, An Important Symptom.
- Dr. Joseph Gant Gaither, Hopkinsville, The Problem of Drainage Following Operation in the Bile Passages.
- Dr. Lawrence T. Minish, Frankfort, Edema—Types and Management.
- Dr. David Woolfolk Barrow, Lexington, Treatment of Appendical Peritonitis.

MAINE

Memorial Clinic.—A medical and surgical clinic, formed by physicians of Gardiner and Richmond, was opened in Gardiner, July 6, and will work in cooperation with the Gardiner General Hospital with access to all of the hospital's laboratory facilities. The new clinic is named for the late Dr. Ralph D. Simons, who practiced in Gardiner for twenty-five years.

MICHIGAN

State Medical Meeting in Detroit.—The seventy-fifth annual session of the Michigan State Medical Society will be held at the Book-Cadillac Hotel, Detroit, September 25-27, under the presidency of Dr. Burton R. Corbus, Grand Rapids. The program includes sectional meetings and seven general assemblies. Among the out of state speakers will be:

- Dr. Wallace M. Yater, Washington, D. C., Surgery of the Heart and the Heart in Surgery.
- Dr. Hugh Hampton Young, Baltimore, Medical and Surgical Aspects of Diseases of the Prostate.
- Dr. Arthur R. Elliott, Chicago, Arterial Hypertension: Forty Years in Retrospect.
- Dr. Julian Deryl Hart, Durham, N. C., Self-Inflicted Injuries.
- Dr. Paul A. O'Leary, Rochester, Minn., Modern Trend in the Treatment of Syphilis.
- Dr. John H. Musser, New Orleans, Vitamin and Mineral Requirements in Pregnancy and the Puerperium.
- Dr. Ralph M. Waters, Madison, Wis., Methods of Resuscitation.
- Dr. Charles F. McKhann, Boston, Cyanosis of the New Born.
- Dr. Richard N. Pierson, New York, Planned Parenthood: Its Contribution to National Preparedness.
- Dr. William G. Birch, Saulte Ste. Marie, Postpartum Sterilization.
- Dr. Jacob P. Greenhill, Chicago, The Three Newest Hormones in Gynecology.
- Dr. Walter Ivan Lillie, Philadelphia, Retinal Changes Associated with Arterial Hypertension.
- Dr. Hans Brunner, Chicago, Indications for Simple and Radical Mastoidectomy.
- Dr. Joseph Stokes Jr., Philadelphia, Prophylaxis to Measles.
- Dr. Nicholson J. Eastman, Baltimore, A Study of Alpha-Lobeline, Metrazol and Coramine in Experimental Anoxia.
- Dr. John G. Downing, Boston, Industrial Aspects of Dermatitis and Eczema.
- Dr. Thomas T. Mackie, New York, Medical and Surgical Significance of Avitaminosis.
- Dr. Edward William Alton Ochsnier, New Orleans, Complications of Appendicitis.
- Dr. Henry C. Sweany, Chicago, The Primary Tuberculous Infection in Adults (sponsored by Michigan Tuberculosis Association).
- Dr. Paul A. Neal, Washington, D. C., Responsibility of the Medical Profession in Industrial Hygiene (sponsored by Michigan Department of Health).
- Dr. Samuel A. Cosgrove, Jersey City, N. J., Hospital Organization and Staff Work as Factors in Maternal Health (sponsored by W. K. Kellogg Foundation).
- Dr. Helen Flanders Dunbar, New York, Psychosomatic Aspects of Illness (sponsored by McGregor Health Foundation).
- Dr. Luther Emmett Holt Jr., Baltimore, Observations on Deficiencies of the Vitamin B Group (sponsored by Children's Fund of Michigan).
- Dr. Ambrose L. Lockwood, Toronto, Surgical Dyspepsias.
- Dr. Chevalier L. Jackson, Philadelphia, Broncho-Esophagology in Relation to General Practice.
- Dr. John D. Camp, Rochester, Minn., Tumors of the Scalp and Skull and Their Significance as Revealed by Roentgenograms.
- Dr. Reginald Fitz, Boston, Changing Picture of Diabetes.

Dwight Anderson, LL.B., New York, will address the county secretaries' conference Wednesday noon, September 25, on "Good Public Relations by the Individual Practitioner of Medicine." The program also includes symposiums on pre-operative and postoperative treatment in surgery and on anoxia. Dr. Rufus I. Cole, Mount Kisco, N. Y., will deliver the Andrew P. Biddle Oration at a public meeting, Wednesday evening. His subject will be "Role of Medical Societies in Medical Progress." The Biddle Oration Scroll will be presented to Dr. Cole following his lecture.

The Michigan branch of the American Medical Women's Association will meet at the Women's City Club, Detroit, September 24. A dinner will be held to honor Dr. Martha L. Longstreet, Saginaw, and speakers will be Drs. Ruth Herrick, Grand Rapids, and Mary Ruth McGuire, Detroit, whose subjects will be, respectively, "When to Refer Dermatoses" and "Obstetrical Observations."

MINNESOTA

Society News.—Dr. Morris Fishbein, Chicago, Editor of THE JOURNAL, gave a special lecture at the Mayo Foundation House, Rochester, July 26, on "Problems Involving Medical Preparedness."

University News.—Lemen J. Wells, Ph.D., assistant professor of anatomy, University of Missouri School of Medicine, Columbia, since 1938, has been appointed associate professor of medicine at the University of Minnesota Medical School, Minneapolis, according to *Minnesota Medicine*.

Personal.—Dr. Alfred M. Ridgway, Annandale, celebrated his fiftieth anniversary in the practice of medicine July 14. At a gathering held to honor him, the speakers included Drs. Berton J. Branton, Willmar, president-elect of the Minnesota State Medical Association; George E. Sherwood, Kimball, and Archibald H. Beard, Minneapolis.

MISSOURI

Jackson County Health Forum.—The program for the 1940-1941 Jackson County Health Forum, sponsored by the auxiliaries of all the accredited hospitals of Jackson County, will be presented in Kansas City as follows:

- Dr. Warren T. Vaughan, Richmond, Va., September 18, Allergy, the Mystery Disease.
- Dr. Anton J. Carlson, Chicago, October 16, The Nature of Aging and the Chimera of Rejuvenation.
- Dr. Walter C. Alvarez, Rochester, Minn., November 20, What's the Matter with the Patient Who Is Tired All the Time?
- Dr. Andrew C. Ivy, Chicago, December 18, The Effects of Narcotics and Alcohol on the Human Body: Facts, Not Opinion.
- Ernest R. Groves, B.D., Chapel Hill, N. C., Jan. 15, 1941, Marriage and Sex Education.
- Dr. Henry H. Turner, Oklahoma City, February 19, Glandular Mechanism of the Body.
- Dr. Bernard L. Wyatt, Tucson, Ariz., March 19, Arthritis—the Great Responsibility and Opportunity.
- Dr. Morris Fishbein, Chicago, Editor of THE JOURNAL, April 16, Your Heart and Your Blood Pressure.
- Dr. William A. O'Brien, Minneapolis, May 21, Medicine Meets Middle Age Needs.

NEW YORK

Gastro-Enteritis from Custard Pastries.—Fifteen cases of gastro-enteritis in four households in Nassau County were recently traced to custard pastries, all obtained from one bakery. *Staphylococcus aureus* was obtained from samples of the pastries and, although the bakery personnel had had no recent illness, insanitary practices and conditions were found, according to *Health News*.

Industrial Conference.—The 1940 medical conference of the General Motors Corporation was held in Buffalo recently. Speakers included Drs. George O. Gundersen, Lansing, Mich., on "Iontophoresis in the Treatment of Fungous Infections of the Skin"; Robert A. Kehoe, Cincinnati, "Control of Occupational Exposures to Lead"; Lydia G. Giberson, New York, "Technic of Listening to Worried Employees," and Arthur G. Cranch, New York, "Health Aspects of the Oxy-Acetylene Process."

Saratoga Springs Advisory Committee.—The Saratoga Springs Authority recently entertained the statewide medical advisory committee at a meeting at the spa with papers by the medical staff. Guest speakers were Dr. Russell L. Cecil, New York, on arthritis and Edward H. L. Corwin, Ph.D., New York, on convalescence. Appointment of this committee was authorized by the law that created the Saratoga Springs Authority and forty-one officers of state, district and county medical societies have accepted appointment, it was announced. Subsequent regular meetings are to be arranged by an executive committee elected at this meeting.

New York City

Books on Military Medicine.—An exhibit of books on historical aspects of military medicine is on view at the New York Academy of Medicine. The display begins with one of the earliest records of gunshot wounds and continues chronologically up to an account of gas warfare published in 1940, according to *New York Medical Week*. Rare books in the academy's library are included. The exhibit was arranged by Dr. Thomas Archibald Malloch, the librarian, and the library staff as part of the medical profession's preparedness plan.

Annual Graduate Fortnight.—The New York Academy of Medicine will present its annual Graduate Fortnight, October 14-25. Clinics will be held each afternoon at two hospitals and evening sessions will be at the academy building. At the first general session Dr. Eli K. Marshall Jr., Baltimore, will deliver the Ludwig Kast Lecture on "Experimental Basis of Chemotherapy in the Treatment of Bacterial Infections" and Dr. Perrin H. Long, Baltimore, the Wesley M. Carpenter

Lecture on "Clinical Bacterial-Chemotherapy; Results Obtained and Dangers Encountered." Speakers at other evening sessions will include:

- Dr. Emanuel Libman, General Consideration of Bacterial Infections.
- Dr. Frank L. Meleney, Prevention and Treatment of Infection in Wounds, Both Operative and Accidental.
- Dr. Hobart A. Reimann, Philadelphia, Pneumococcal and Virus Pneumonia.
- Dr. Robert M. Lewis, New Haven, Conn., Gonococcal Infections in the Female.
- Dr. Percy S. Pelouze, Philadelphia, Gonococcal Infections in the Male.
- Dr. William Thalheimer, Treatment of Infections by Methods Other Than Chemotherapy.
- Dr. Thomas M. Rivers, Virus Infections.
- Dr. John R. Paul, New Haven, Conn., Acute Poliomyelitis.
- Dr. Walter M. Simpson, Dayton, Undulant Fever.
- Dr. George Blumer, New Haven, Rickettsial Diseases.
- Dr. Tracy J. Putnam, Newer Conceptions of Postinfectious and Related Forms of Encephalitis.

There will also be four morning panel discussions, with chairmen and subjects as follows: Drs. Long, chemotherapy in infections; Frederic W. Bancroft, osteomyelitis and bacterial infections of joints; Thomas T. Mackie, relation of vitamins to infection, and Alexander T. Martin, infections in children.

NORTH CAROLINA

Personal.—Dr. William P. Holt, Erwin, was honored by the Harnett County Medical Society at a dinner August 5. Dr. Holt is 70 years old and has practiced medicine forty-five years. He was graduated from Jefferson Medical College of Philadelphia in 1895.

New Building for Charlotte Presbyterian Hospital.—A new building with accommodations for 160 beds and twenty-five bassinets was opened by the Presbyterian Hospital, Charlotte, with a reception to the public July 18. The new plant was built in front of the old building, formerly a college, at a cost of about \$600,000. The funds were raised through large gifts from the Duke Endowment, large and small private gifts, including donations by the Presbyterian churches of the city and Mecklenburg County. The hospital was established in 1898 and has previously expanded its capacity by moving several times. The college property, which has ten acres of ground, was purchased in 1917 and remodeled to provide 100 beds and ten bassinets. The Rev. C. C. Beam is the superintendent, Dr. Oren Moore is president of the medical staff and Dr. William Marvin Scruggs, chairman of the medical advisory committee.

PENNSYLVANIA

Personal.—Dr. Ralph Emerson Buckley, Hazleton, was elected commander of the Pennsylvania department of the Military Order of the Purple Heart at the annual convention recently.—Dr. John B. Carrell, Hatboro, who recently celebrated his eighty-ninth birthday, is compiling a historical scrapbook of the Bucks County Medical Society.—Dr. Effie C. Ireland of the staff of Laurelton State Village, Laurelton, has been appointed superintendent to succeed Dr. Mary Moore Wolfe, who had been superintendent of the institution since its opening in 1919.

Philadelphia

Dr. Craighill Appointed Acting Dean.—Dr. Margaret D. Craighill, Greenwich, Conn., has been appointed acting dean of the Woman's Medical College of Pennsylvania to fill the vacancy caused by the retirement of Dr. Martha Tracy. Dr. Craighill graduated from Johns Hopkins University School of Medicine, Baltimore, in 1924 and was assistant resident in gynecology at Johns Hopkins Hospital from 1926 to 1928. Since 1928 she has been in private practice in Greenwich.

SOUTH CAROLINA

Annual Piedmont Assembly.—The annual Piedmont Postgraduate Clinical Assembly will be held at the Anderson County Hospital, Anderson, September 17-19. The program includes the following addresses:

- Dr. Jack C. Norris, Atlanta, Ga., Technical and Chemical Importance of the Erythrocyte Sedimentation Rates.
- Archie Black, Ph.D., Squibb Institute for Medical Research, New Brunswick, N. J., Recent Work in the Field of Vitamin Therapy.
- Dr. Everett L. Bishop, Atlanta, The Melanomas.
- Lieut. Col. James E. Aeb, Army Medical Museum, Washington, D. C., Bone Pathology.
- Dr. James J. Clark, Atlanta, X-Ray in the Treatment of Infections.
- Dr. Robert A. Ross, Durham, N. C., Sex Endocrine Therapy and Pelvic Surgery.

In cooperation with the South Carolina division of the Southeastern Surgical Congress, the assembly will present a symposium on fractures by Drs. William A. Boyd, Columbia; Joseph Warren White and Charles O. Bates, Greenville; Carroll J. Scurry, Greenwood; Lowell H. Coleman, Spartanburg;

Frank A. Hoshall, Charleston; Austin T. Moore, Columbia, and Edward T. Kelley, Kingstree. Dr. LeGrand Guerry, Columbia, will introduce the symposium with "A Potpourri of Surgical Impressions." At an evening dinner Dr. William L. Pressly, Due West, president of the South Carolina Medical Association, will discuss "Military Preparedness and the Physician." Dr. Edgar A. Hines, Seneca, is president of the assembly.

TENNESSEE

Surgical Meeting.—The Tennessee division of the Southeastern Surgical Congress will meet in Shelbyville, September 17, with the Bedford County Medical Society as host. Among the speakers will be Drs. Edgar G. Ballenger, Atlanta, Ga., on "Hematuria—Pyuria"; Irvin Abell, Louisville, Ky., "Problems of the Mammary Glands," and Troy P. Bagwell, Knoxville, "Management of the More Common Types of Fractures."

GENERAL

New Ruling on Case Records for Board Examinations.—The American Board of Obstetrics and Gynecology at its recent annual meeting at Atlantic City adopted a ruling that case records submitted by candidates must be of patients treated within four years prior to the date of the candidate's application. In addition, the ruling stipulated that the number of cases taken from the candidate's residency service should not be more than half (twenty-five) of the total number (fifty) of cases required. Applications for the next examination and review of case histories (Part I) for group B candidates, which will be held in various cities of the United States and Canada on Saturday, Jan. 4, 1941, must be on file in the office of the secretary not later than October 5, the board announced. For further information and application blanks, address Dr. Paul Titus, secretary, 1015 Highland Building, Pittsburgh.

Outbreak of Poliomyelitis in Indiana.—One hundred and ninety-four cases of infantile paralysis were reported in Indiana for the four weeks ended August 24, newspapers reported. Twenty deaths have been reported in the state since June 1. Most of the cases, 10 per cent of which are in adults, have been in the northern half of the state. Two cases were recorded in June, seventeen in July and for the consecutive four weeks in August, fifteen, forty-one, fifty-eight and seventy-nine. Reports from counties showed fifty-one cases and six deaths in St. Joseph, forty-one in Elkhart, seventeen in Marshall, fourteen in Marion and ten in Fayette. In St. Joseph County the opening of all schools has been postponed two weeks until September 16. Children are not permitted to attend theaters, picnics are not permitted in parks and other gatherings are being discouraged. School openings in the city of La Porte and La Porte County have been postponed from September 3 to September 9. Six high schools in the eastern division of the Northern Indiana High School Conference have ordered suspension of football practice and have canceled the first two games of the football schedule: Washington, Central, Riley and John Adams in South Bend; Central in Mishawaka, and the high school in Goshen. Every effort is being directed by the state health department and cooperating agencies toward controlling the outbreak, including educational activities for parents and practicing physicians. The state maintains hospital service for acute and convalescing cases of poliomyelitis at the Indiana University Medical Center, Indianapolis. The crippled children division of the state department of public welfare has funds available to furnish medical consultation to physicians any place in the state for their patients in the acute stages. This division also has six orthopedic nurses who are available to assist physicians in the proper splinting of paralyzed muscle groups in the acute stage of the disease. The National Foundation for Infantile Paralysis has placed its equipment and facilities at the disposal of the state department of health, including iron lungs, splints and frames.—A release from the state department of health of Iowa indicates that seventy-three cases of poliomyelitis were reported for the week ended August 24, as compared with one for the corresponding week last year.—Newspaper clippings report an increasing number of cases in northern Michigan. Between May 15 and August 22 sixty cases with nine deaths were reported from seven upper peninsula counties.

CORRECTION

Pan American Sanitary Conference.—In a news item under Latin America in THE JOURNAL, August 17, page 545, it was stated that the Pan American Conference of Directors of Health would meet in Rio de Janeiro in 1942. This should have been the Pan American Sanitary Conference.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 1, 1940.

Special Surgical Centers for War Casualties

In December last the Ministry of Health announced that arrangements had been made for establishing special centers for the treatment of faciomaxillary, head and chest injuries and orthopedic cases of the war. The medical superintendents of war hospitals were told that there should be no hesitation in transferring suitable cases to these centers, as success depended on casualties reaching centers where specialist skill and equipment were available at the earliest possible time. The types of cases to be sent to orthopedic centers were fractures, deformities of the limbs and spine, diseases and derangements of joints, including the spine, and injuries of the peripheral nerves. Now that a considerable number of casualties are being admitted to the war hospitals, the ministry has again drawn attention to the need for transferring cases to the special centers when this can be done without risk to the patient. Early transfer is enjoined in all types of cases but particularly in faciomaxillary cases and cases in which plastic surgery may be needed. If advice is required as to the line of treatment to be adopted or if there is any doubt as to the desirability of transferring the case, the assistance of the appropriate consultant adviser should be sought. There are now in England ten special surgical centers for the treatment of faciomaxillary injuries, six for the treatment of head injuries, nine for chest injuries and eighteen for orthopedic cases.

Body Armor in War

The use of body armor in war continues to be discussed. The important discussion at the Section of Surgery of the Royal Society of Medicine was reported previously. The suggestions were not confined to body armor but concerned also the strengthening of certain parts of aircraft and other machines. For this purpose compressed fiber and materials such as bakelite, which are very light yet capable of withstanding shrapnel, are suitable. Experiments were made in the last war with body armor. Breastplates were put on the market by several firms and were occasionally issued on trial. They were also sometimes found in captured German machine gun positions. The chief argument against them was their weight. It was thought that some of them might result only in the expansion of the bullet and thus increase the severity of the wound. But since then progress has been made in producing light metals of great tensile strength.

In modern war many men are killed by small missiles which enter the chest and pierce a blood vessel or the heart. Often there is no great velocity behind these missiles. There are many cases of bullets or splinters being stopped by a cigaret case or a little flask carried in the breast pocket. It should not be impracticable to provide certain troops, such as machine gun detachments, with some protection on the these lines. The shrapnel helmet, now adopted by all armies, has proved invaluable but does not protect the eyes from missiles not coming from above. For this purpose a duralumin visor has been suggested. Though the whole energies of the country are as far as possible diverted to war, nothing so far is known of the production of body armor.

The International Standards for Antitoxin and Tuberculin

The international standards for serums and bacteriologic products are held on behalf of the Health Organisation of the League of Nations by the State Serum Institute, Copenhagen, which

has furnished samples to institutions and research workers in different countries. As the war has interrupted the supply, the league has requested the Medical Research Council in London to allow samples of the British standards for these products held by it to be furnished to those who have hitherto received the international standards from Copenhagen. The Medical Research Council has agreed to do this and so prevent the complete interruption of the service. The British standards are either part of the same materials as those kept at Copenhagen or have been repeatedly tested by the British and Danish institutes to ensure that the units determined in terms of the British standards are exactly equivalent to the international units. The following are the standards available: (1) Identical in material with the international standards: staphylococcus antitoxin, gas gangrene antitoxins (perfringens, *Vibrio septique*, oedematis, histolyticus), antidyentery serum (Shiga), antipneumococcus serum (types I and II), old tuberculin. (2) Different in material but with identity of the unit indication confirmed twice a year at Copenhagen and London: diphtheria antitoxin, tetanus antitoxin. The British can also supply a standard solution of diphtheria antitoxin for the flocculation test. The stocks are adequate to meet all demands except for antipneumococcus serums and it is therefore requested that demands for these be restricted to essential needs. It is also requested that, in order to conserve these standards, laboratories will cooperate by establishing local standards the potency of which has been determined by comparative tests.

The Treatment of War Wounds

The Medical Research Council has appointed a committee, which includes representatives of the fighting services and the emergency service established for the treatment of war casualties under the Ministry of Health, to advise on the application of the results of research to the treatment of wounds. The committee consists mostly of eminent surgeons, some of whom hold military or naval rank attained for service in the last war: Sir Cuthbert Wallace (chairman), Mr. E. Rock Carling, Mr. C. H. S. Frankau, Prof. F. R. Fraser, Prof. G. E. Gask, Surgeon Rear Admiral G. Gordon Taylor, Col. Sir Charles Gordon-Watson, Major General H. Marrian Perry, Prof. R. S. Pilcher and Prof. J. Paterson Ross. There are two bacteriologists: Sir John Ledingham, F.R.S., and Prof. W. W. C. Topley.

The Highest Marriage Rate on Record

One result of the war is to produce the highest marriage rate on record. In 1939 it was 21.1 per thousand of population against 17.6, 17.5 and 15.8 in the preceding years backward. The connection with the war is shown by the fact that the increase took place in the second half of the year. The reason is that most of our young men are in the fighting forces and that their wives and children are entitled to allowances, including pensions in case of death.

Sir George Berry

Sir George Berry, a leading ophthalmologist, has died in his eighty-seventh year. Educated at Edinburgh, he studied ophthalmology for some years in various European hospitals. In Copenhagen he worked with his uncle, Prof. Hansen Grut, a distinguished ophthalmologist. While still comparatively young, Berry was regarded as an authority both on the European continent and in America. He produced a textbook, "Diseases of the Eye," which had a great reputation not only as an exhaustive treatise but as embodying many original observations and ideas. Two other works, "Subjective Symptoms in Eye Disease" and "Ophthalmoscopic Diagnosis," were also widely read. His remarkable knowledge of the significance of early symptoms in the early diagnosis of disease not only was valuable in diagnosis but gave great interest to his teaching of students. He served on the staff of the eye department of the Royal Infirmary,

Edinburgh, for twenty-three years. He was one of the founders of the Ophthalmological Society of the United Kingdom, of which he was president in 1909-1911. He contributed many important papers to its transactions.

Buenos Aires

(From Our Regular Correspondent)

Aug. 2, 1940.

Influenza in Buenos Aires

A widely prevalent infectious catarrh, generally called grip but having nothing in common with the malignant form of 1918, and which involves entire families, has been active since the beginning of July in what is the winter season of this hemisphere. Persons affected need to stay in bed for a few days. Fever as high as 103 F. is encountered, accompanied with disorders of the upper respiratory passages, less frequently with those of the gastrointestinal tract. Its virulence is attributed to the brusque climatic changes that were frequent this year. Micro-organisms such as pneumococci, Pfeiffer's bacillus and Neisseria catarrhalis, generally found on the oral and pharyngeal mucosa, are activated by severe changes of temperature. No deaths have been reported.

Bubonic Plague

The four isolated cases of plague that appeared in the northern province of Salta had no geographic relation to one another. Dr. Julio D. Outes, head of the plague control service in Salta, ascribes these isolated cases to rodents living in the woods, in which the plague bacillus was shown to be present. At the time of the occurrence of the disease there was also a considerable infestation of rats. Prophylactic inoculation against plague was demonstrated to be ineffective. General inoculation at the time of the appearance of plague is therefore useless. There is need of a new active vaccine. Professor Sordelli, director of the bacteriologic institute in Buenos Aires, has demonstrated that immunity conferred by the plague itself is permanent.

More recently new cases involving not only bubonic but also pneumonic plague have been reported from northern Argentine provinces. These no doubt are causally to be connected with the rat invasions observed there. The national health department took immediate steps to enforce the law requiring property owners and local and provincial authorities to exterminate rats and other rodents. A commission was also appointed, which has worked out extensive plans of control.

Tuberculosis

The second national conference on tuberculosis, held recently in Cali, Colombia, adopted a number of recommendations. The high infectiousness in childhood makes social prophylaxis imperative. Since, according to law, tuberculosis is considered an occupational disease, proof of infection must be submitted. It was pointed out that institutions for tuberculous persons within city limits do not constitute a danger to the community if appropriate hygienic regulations are carried out. Early diagnosis and treatment of tuberculosis as well as official protection of the public by eliminating the advertising and sale of medicines guaranteed to cure tuberculosis were demanded by the conference. Houses previously tenanted by tuberculous persons represent no source of infection if disinfection has been properly made. Prophylactic vaccination against tuberculosis as well as the training of school teachers in breathing exercises and in the protection of school children against tuberculosis was recommended.

In Lima, Peru, the first national conference on tuberculosis, held in April, called attention to the number of incurable cases and asked for an increase in hospital beds. The conference recommended the technical and scientific unification and control of all existing institutions under the proper service of the government. The organization of a national council for tuber-

culosis control, designed to extend social and economic aid over the whole country and to enlist the cooperation of philanthropists, was recommended. Facilities for lung surgery were asked. The conference recommended the study of compulsory insurance against tuberculosis in Peru, the establishment of university courses for special training in the field of tuberculosis and the control of quack advertising.

The Argentine League Against Tuberculosis is active. The state has permitted a lottery, which has met with popular favor. The price of a chance is 1 peso (30 cents). The proceeds will be used to equip the league's fourteen story tuberculosis institute now under construction. The sums of 500,000 pesos (about \$150,000) raised by public contributions and 1,050,000 pesos (about \$312,000) appropriated by the government have already been expended; the complete cost of construction and of equipment is estimated at 10,000,000 pesos (nearly \$3,000,000). It will contain 1,373 beds and research facilities. The immediate plans envisage a sanatorium with 482 beds costing about 4,300,000 pesos (\$1,280,000). The records of welfare stations and dispensaries indicate that eight out of every ten patients seeking consultation show progressive stages of tuberculosis. This alarming revelation has led to a change of procedure: patients are now visited in their homes and receive early treatment. Other organizations have likewise shown great interest in antituberculosis work. A cooperative organization, founded in 1924, in the department of justice and education has recently opened new consultation centers and will shortly operate a mountain sanatorium in Alta Gracia, Córdoba. This organization furnishes medicine, gives pensions to patients who must enter an institution and grants traveling expenses and financial aid to patients who must move to climatically favorable regions. Members pay a monthly fee of 50 centavos (15 cents). Members pay 20 centavos (6 cents) on the death of one of its members. The organization is now able to pay a death benefit as high as 8,000 pesos (\$2,380). The results achieved by this organization against tuberculosis have led to a project for compulsory insurance of this kind for all of the 270,000 federal employees.

Personal

Prof. Angel H. Roffo was appointed incumbent of the new chair of cancerology, established at the faculty of medicine of the University of Buenos Aires.

Marriages

EDWARD JAMES McDERMOTT BLANCHARD, New York, to Miss Mary Bowers Carter of Englewood, N. J., June 22.

KENNETH DUNHAM, St. Augustine, Fla., to Miss Mary Catherine Badgett of Richwood, W. Va., in July.

FRANCIS EDMUND SHEARER, Louisville, Ky., to Miss Hazel Broadus of Lancaster at Atlanta, Ga., June 22.

ROLAND HARRIS VAUGHAN, Edenton, N. C., to Miss Ruth Elizabeth Miller of Wilkes-Barre, Pa., June 1.

WILLIAM CAMP MATTHEWS, Davidson, N. C., to Miss Edith Mountcastle Summers of Charlotte, June 26.

ROBINSON MARSHALL TRUIT JR. to Miss Eleanor Marie MacDonald, both of Philadelphia, June 29.

THURMOND DE WITTE BOAZ JR., Shreveport, La., to Miss Margaret Davenport of Seattle, June 18.

HAL STANDISH JOHNSON, Berwind, W. Va., to Miss Ellen Reynolds of Chesterfield County, June 5.

CHARLES JULIAN RAGAN, New Orleans, to Miss June McCann of Brookhaven, Miss., June 15.

JOHN CLINTON ALLEN, North Haven, Conn., to Miss Ruth Hensel of Germantown, Pa., recently.

HAZEL JOSEPH WILLIAMS, Brownsburg, Va., to Miss Marion Louise Pugh of Richmond, May 25.

GUS ECKHARDT, Galveston, Texas, to DR. MARY ELIZABETH FATHERREE of New York, June 26.

Deaths

William Allen Pusey © President of the American Medical Association, 1924-1925, died at his home in Chicago, August 29, aged 74. Dr. Pusey had a distinguished career as a scientist, a teacher, an author and a civic and medical leader. He was born Dec. 1, 1865, in Elizabethtown, Ky., the descendant of a Kentucky pioneer family. His father was a physician and his great-grandfather on his mother's side was Dr. John T. Hodgen of St. Louis, one of the most famous surgeons of his day and also President of the American Medical Association. Following graduation from Vanderbilt University in 1885, where he received the A.B. degree, Dr. Pusey continued his studies, receiving the master's degree in 1886 and election to Phi Beta Kappa. He then attended the University of the City of New York Medical Department, receiving the M.D., degree from that institution in 1888. For the next five years he did family practice in Kentucky and after his father's death spent considerable time in postgraduate training in New York and in Europe. In 1893 he came to Chicago to specialize in diseases of the skin. He was made professor of dermatology in the University of Illinois College of Physicians and Surgeons in 1894, holding that position until 1915, at which time he became professor emeritus.

Dr. Pusey became president of the American Dermatological Association in 1910 after having been president of the Chicago Dermatological Association for three terms. He was president of the Chicago Medical Society, 1918-1919, and president of the Institute of Medicine of Chicago, 1926-1927. In the American Medical Association, he served as a member of the House of Delegates from the Section on Dermatology and Syphilology in 1910 and in 1914, and as a delegate from the state of Illinois from 1926 to 1932. He was elected treasurer of the American Medical Association at the Los Angeles session in June 1911 and served in that capacity until the St. Louis session of 1922. He was also chairman of the Section of Dermatology in 1909. In 1923 he was elected President of the American Medical Association. His memberships in scientific organizations included the Chicago Pathological Society, the Chicago Roentgenological Society, the Japanese, Czechoslovakian, British, Viennese and Danish Dermatological societies, and the Dermatological Section of the Royal Society of London.

During the World War Dr. Pusey was attached to the Surgeon General's office as chairman of the committee for the control of venereal diseases.

In the scientific aspects of dermatology Dr. Pusey was a pioneer, particularly in the therapeutic use of the roentgen ray. In his book first published in 1903 he presented many new uses for the roentgen ray, including its application in leukemia and Hodgkin's disease, in which he was the first to employ it. His work as an educator in medical science is widely recognized; he was given the honorary degree LL.D. by the University of New Mexico in 1925, and he served as a member of the Commission on Medical Education from 1925 to 1932.

Notwithstanding his multitudinous scientific activities, Dr. Pusey devoted himself to civic duties and responsibilities. He was chairman of the Health Division of the Chicago Council of Social Agencies, a member of the Advisory Board of the Cook

County Bureau of Public Welfare and a director of the Non-Partisan Voters' League. He was also a member of the Executive Committee of the National Research Council, a member of the executive committee of A Century of Progress Exposition in Chicago and a member of its board of trustees, and a director of the Rosenwald Museum of Science and Industry.

Dr. Pusey's literary contributions were associated with the historical aspects of dermatology and syphilology and included not only innumerable articles in periodical literature but also books on "The Roentgen Rays in Therapeutics and Diagnosis" (1903), "The Principles and Practice of Dermatology" (1907), "Syphilis as a Modern Problem" (1915), "History of Dermatology" (1932), and "History of Syphilis" (1933). As a hobby, he concerned himself particularly with colonial history related to the state of Kentucky. His work "The Wilderness Road to Kentucky," published in 1921, was recognized as a classic contribution. He was also author of "A Doctor of the 1870's and 80's," published in 1931. His contributions addressed to the

public included a popular work on "The Care of the Skin and Hair" (1912) and other educational works on the venereal diseases. He had contributed to the *American Mercury*, *Good Housekeeping* and many other leading magazines.

No doubt, one of his greatest services to American medicine was the conducting of negotiations which resulted in establishment by the American Medical Association of the *Archives of Dermatology and Syphilology* in 1920. Under his editorship many a young man was introduced into proper methods of research in the literary aspects of his chosen profession and many were taught the fundamentals of good scientific literary expression. In January 1937 a special number of the *Archives of Dermatology and Syphilology* was dedicated to Dr. Pusey. The contributors included writers in every field of medical science, educators, historians and leaders in civic affairs. In recent years, even though in failing health, Dr. Pusey continued his activities for the advancement of medical science, aiding in the campaign against regimentation of medical practice exactly as he had fought previously for raising the standards of medical education.

The life of Dr. Pusey is conspicuous for his service to his specialty in medical science, to the institutions with which he was associated and to the organized medical profession. He lived a full life almost to the

moment of his passing, and the influence of his career will continue for many years to come.

Percy Moreau Ashburn © Colonel, U. S. Army, retired Washington, D. C.; Jefferson Medical College of Philadelphia 1893; entered the army as an assistant surgeon in 1898 and was promoted through the grades to rank of colonel in 1917; retired in 1931 for disability in line of duty; returned to active duty from Jan. 1, 1932, to Aug. 15, 1932; was president of the Army Board for the Study of Tropical Diseases in the Philippine Islands, 1906-1907; served with the United States Commission to the Republic of Liberia in 1909; was detailed president of the Army Board for the Study of Tropical Diseases of the Philippine Islands and Ancon, Panama, in 1913; general inspector of the Panama Canal Health Department, 1914-1915; commander of the Medical Officers Training Corps at Fort Benjamin Harrison, Indiana, 1917; served with the American Expeditionary Forces, 1918-1919; was decorated with the Legion of Honor for services in France; commandant of the Medical Field Service School from 1920 to 1923; professor of military hygiene;



WILLIAM ALLEN PUSEY, M.D., 1865-1940

United States Military Academy, from 1923 to 1927; librarian of the Army Medical Library in Washington, D. C., from 1927 to 1932, when he retired; since 1932 superintendent of the Columbia Hospital for Women; fellow of the American College of Surgeons and the American College of Physicians; author of "Elements of Military Hygiene," 1909, and "History of the Medical Department of the United States Army," 1929; at one time on the editorial staff of the *Quarterly Cumulative Index Medicus*; aged 68; died, August 20, of carcinoma of the prostate with metastases to the lungs and pelvic bones.

Harold Douglas Singer Ⓢ Chicago, editor-in-chief of the *Archives of Neurology and Psychiatry* since 1934, died on his ranch in New Mexico, August 28, following a heat stroke. He was 65 years old. Dr. Singer was born in London, England, Jan. 7, 1875. Following his studies in the Merchant Taylors' School, he was educated in the University of London, St. Thomas's Hospital and the Royal College of Physicians, receiving the degrees of bachelor of medicine and doctor of medicine. He served as house physician in St. Thomas's Hospital, London, 1898, and as assistant superintendent of the Clinical Laboratory, 1899. Then he became resident in the National Hospital of London, 1900-1901, and assistant resident physician in St. Thomas's Hospital from 1902 to 1904. When he arrived in the United States in 1904 he became associate professor of neurology in Creighton University School of Medicine, Omaha, from 1904 to 1906, then associate professor of psychiatry in the University of Nebraska College of Medicine, Omaha, 1906-1907. He served at the same time as assistant superintendent of the Norfolk (Neb.) State Hospital. In 1907 he came to Illinois as director of the Illinois State Psychopathic Institute, holding that position until 1920. He became state alienist in Illinois in 1917 and was at the same time special examiner for the Illinois Exemption Board, advisory consultant in neuropsychiatry to the Surgeon General of the U. S. Public Health Service and, from 1919 to 1922, advisory consultant for the U. S. Veterans Bureau. Since 1919 he had been professor of psychiatry at the University of Illinois College of Medicine.



HAROLD DOUGLAS SINGER, M.D.,
1875-1940

Dr. Singer was a Fellow of the Royal Society of Medicine and the Royal College of Physicians and a member of the American Neurological Association, the American Psychiatric Association and the American Psychopathological Association. At the time of his death he was president of the American Neurological Association and president-elect of the American Psychiatric Association.

Early in his career he began contributing to various publications in his special field. He was author of the section on mental diseases in Nelson's Loosleaf System of Medicine and of the section on psychoneuroses in Tice's Loosleaf System of Medicine. He was distinguished as an educator both of the medical profession and of the public. In 1934 he became president of the American Board of Psychiatry and Neurology and was exceedingly active in the work of that organization. He served also as an expert witness in many legal cases.

For the American Medical Association he was appointed in 1930 as chairman of the Committee to Study Problems in Mental Hygiene and Hospitals and was chairman of the Section on Nervous and Mental Diseases, 1934-1935. He became a member of the editorial board of the *Archives of Neurology and Psychiatry* in 1930, succeeding Dr. Theodore Weisenburg as editor-in-chief in 1934, and he did significant work in the advancement of that publication. He had also been attending neuropsychiatrist at the Milwaukee Sanitarium since 1923 and attending neurologist at the Augustana Hospital since 1931. Dr. Singer possessed a quiet manner and pleasing personality, a scientific point of view and an integrity that never yielded to selfish influences.

Horace Madison Hicks Ⓢ Amsterdam, N. Y.; Chicago Homeopathic Medical College, 1886; past vice president of the Medical Society of the State of New York; past president and secretary of the Medical Society of the County of Montgomery; veteran of the Spanish-American War; secretary of the Tuberculosis and Health Association of Montgomery County; at one time health officer, and president of the school board; on the staffs of the Amsterdam City and St. Mary's hospitals; aged 77; died, July 19, of coronary occlusion.

George Taylor Stewart, Johnston, R. I.; Hahnemann Medical College of Philadelphia, 1882; chief of staff and superintendent of the Metropolitan Hospital, Welfare Island, N. Y., from May 1, 1890, to Jan. 7, 1901, and superintendent from April 1, 1906, to Dec. 31, 1907; superintendent of the Bellevue Hospital, New York, from Jan. 7, 1901, to Jan. 14, 1903; superintendent, department of health, New York City, from Jan. 14, 1903, to April 1, 1906; aged 85; died, July 25 of chronic myocarditis and arteriosclerosis.

Benoni Mowry Latham, Mansfield, Mass.; Harvard Medical School, Boston, 1900; member of the Massachusetts Medical Society; for many years chairman of the school committee; served during the World War; past president of the Bristol North District Medical Society; on the courtesy staff of the Sturdy Memorial Hospital, Attleboro; aged 67; died, July 24, in a hospital at Taunton of chronic myocarditis and arteriosclerosis.

Claude Oliver Abernethy, Raleigh, N. C.; University of North Carolina School of Medicine, 1906; member of the Medical Society of the State of North Carolina; fellow of the American College of Surgeons; on the staffs of the Rex Hospital and St. Agnes Hospital; served during the World War; aged 59; died, July 21, in a hospital at Goldsboro of a fractured skull received in an automobile accident.

Filip Carolus Forsbeck Ⓢ Cincinnati; Rush Medical College, Chicago, 1926; surgeon, United States Public Health Service; formerly epidemiologist, Massachusetts State Health Department, and director, bureau of epidemiology, Michigan State Health Department; aged 40; died, July 13, at the United States Marine Hospital, Baltimore, of glioblastoma.

Harvey Park Barret Ⓢ Charlotte, N. C.; University of Louisville (Ky.) Medical Department, 1908; member of the American Association of Pathologists and Bacteriologists, the Society of American Bacteriologists and the American Society of Clinical Pathologists; aged 55; died, July 30, of coronary occlusion.

Rose Hirschler Ⓢ Philadelphia; Woman's Medical College of Pennsylvania, Philadelphia, 1899; professor of dermatology at her alma mater; member of the American Academy of Dermatology and Syphilology; aged 65; on the staff of the Woman's Hospital, where she died, July 26, of lymphatic leukemia.

Franklin Simcoe Gillespie Ⓢ Swarthmore, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1923; health officer of Swarthmore; physician to Swarthmore College; aged 43; died suddenly, July 27, while boating on the Northeast River at Northeast, Md., of coronary thrombosis.

Arthur James O'Leary, New York; University of the City of New York Medical Department, 1889; past president of the Bronx County Medical Society; formerly assistant sanitary superintendent of the health department in the Bronx; aged 71; died, July 27, of pulmonary tuberculosis.

William Henry Berge, Scranton, Pa.; College of Physicians and Surgeons, Baltimore, 1893; member of the Medical Society of the State of Pennsylvania; formerly coroner of Luzerne County and chairman of the board of health; aged 71; died, July 14, of coronary thrombosis.

Edward Wyker Closson Ⓢ Lambertville, N. J.; University of the City of New York Medical Department, 1885; formerly postmaster, county coroner, president of the school board and bank president; aged 78; died, July 19, of interstitial nephritis and cardiovascular sclerosis.

Harry Berger, Trenton, N. J.; New York Homeopathic Medical College and Flower Hospital, New York, 1914; member of the Medical Society of New Jersey; on the staff of the McKinley Hospital; aged 51; died, July 21, of injuries received in an automobile accident.

George J. Gannett, Syracuse, N. Y.; New York Homeopathic Medical College and Hospital, New York, 1900; member of the Medical Society of the State of New York; aged 63; died, July 20, when the automobile in which he was driving was struck by a train.

Percival Bainbridge Glew, Dallas Center, Iowa; Drake University College of Medicine, Des Moines, 1913; member of

the Iowa State Medical Society; aged 50; died, July 8, in a hospital at Springfield, Ohio, of coronary occlusion and cerebral embolism.

John E. Fuller, Paris, Texas; Tulane University of Louisiana School of Medicine, New Orleans, 1888; member of the State Medical Association of Texas; aged 78; on the staff of the Sanitarium of Paris, where he died, July 20, of cerebral hemorrhage.

Archie Phelps Campbell, East Ellsworth, Wis.; University of Pennsylvania School of Medicine, Philadelphia, 1924; member of the State Medical Society of Wisconsin; on the staff of the City Hospital, River Falls; aged 46; died, July 15, of heart disease.

Thomas Irving Packard, Lanark, Ill.; Rush Medical College, Chicago, 1895; member of the Illinois State Medical Society; for many years president of the school board; aged 75; died, July 4, of cerebral embolism, arteriosclerosis and hypertension.

Ruth Webster Lathrop, Philadelphia; Woman's Medical College of Pennsylvania, Philadelphia, 1891; at one time associate professor of physiology at the Temple University School of Medicine; aged 78; died, July 31, of chronic myocarditis.

Russell Walter Goebel, Oak Park, Ill.; University of Illinois College of Medicine, Chicago, 1925; member of the Illinois State Medical Society; aged 40; died, July 31, at his summer home near Wauconda of sclerosis of the liver.

Manly Lafayette Cummins, Ashford, Ala.; Medical College of Alabama, Mobile, 1906; member of the Medical Association of the State of Alabama; aged 63; died, July 28, in a hospital at Birmingham of carcinoma of the lung.

Fridolin John Otto Kraushaar, Aberdeen, S. D.; State University of Iowa College of Medicine, Iowa City, 1909; member of the South Dakota State Medical Association; aged 54; died, June 26, of coronary occlusion.

William Baum Small Ⓢ Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1893; for many years on the staff of the Lankenau Hospital; aged 70; died, July 27, of intraventricular hemorrhage.

David Robinson Ⓢ Tillamook, Ore.; Harvard Medical School, Boston, 1906; secretary and past president of the Tillamook County Medical Society; county health officer; aged 66; died, July 27, of cerebral hemorrhage.

Timothy Francis Cotter, Haverhill, Mass.; Baltimore Medical College, 1906; member of the Massachusetts Medical Society; aged 57; died, July 3, in the Hale Hospital of carcinoma of the rectum with metastases.

John Bloomfield Beekman Ⓢ Bedminster, N. J.; University of the City of New York Medical Department, New York, 1882; aged 86; died, July 10, in the Overlook Hospital, Summit, following an operation on the prostate.

Chester LeRoy Goldsmith, Winchester, N. H.; Maryland Medical College, Baltimore, 1912; member of the New Hampshire Medical Society; aged 59; died, July 26, of coronary occlusion and myocarditis.

Irwin Scott Flegal, Karthaus, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1894; member of the Medical Society of the State of Pennsylvania; aged 75; died, August 28, of coronary occlusion.

Xenia Ethel Bond, Salem, W. Va.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, Chicago, 1905; aged 69; died, July 23, in a hospital at Clarksburg.

Edgar E. Noel, Huntington, W. Va.; College of Physicians and Surgeons, Baltimore, 1884; aged 80; died, July 18, at St. Mary's Hospital of complications following a fractured hip, received in a fall.

Walter Scott Abbott Kimball, Rumford Point, Maine; Medical School of Maine, Portland, 1898; aged 68; died, May 20, of coronary sclerosis, phlebitis and transurethral resection of the prostate.

William S. Love Ⓢ Baltimore; University of Maryland School of Medicine, Baltimore, 1890; aged 73; died, May 13, in the Bon Secours Hospital of lobar pneumonia and acute nephritis.

John P. Kerrigan, Rutland, Vt.; Chicago College of Medicine and Surgery, 1915; served during the World War; aged 47; died, July 29, of coronary thrombosis and diabetes mellitus.

Hugh Arthur Johnston, Port Burwell, Ont., Canada; University of Toronto Faculty of Medicine, 1894; for many years associate coroner of Elgin County; aged 68; died, June 21,

Avery Barnes McGill, San Francisco; University of the City of New York Medical Department, New York, 1892; aged 76; died, July 17, of a self-inflicted bullet wound.

Ernest M. Rast, Cameron, S. C.; Medical College of the State of South Carolina, Charleston, 1898; formerly mayor; aged 69; died, July 5, of arteriosclerosis and uremia.

Walter Henderson, Hawarden, Sask., Canada; McGill University Faculty of Medicine, Montreal, Que., 1894; aged 74; died, May 1, in Spokane, Wash., of leukemia.

Frank William Love Ⓢ Buffalo; University of Buffalo School of Medicine, 1897; aged 70; died, July 21, of cerebral hemorrhage, arteriosclerosis and hypertension.

Edwin Morgan Ripley, Collinsville, Conn.; Eclectic Medical College of the City of New York, 1871; aged 92; died, June 5, of bronchopneumonia and arteriosclerosis.

Frank L. Blachly Sr., Moline, Ill.; College of Physicians and Surgeons, Baltimore, 1881; aged 80; died, July 27, in the Lutheran Hospital of mesenteric thrombosis.

Joseph Peter Bilodeau, Vancouver, B. C., Canada; McGill University Faculty of Medicine, Montreal, Que., Canada, 1913; aged 55; died, July 29, in Kamloops.

William Charles Mardorf Ⓢ St. Louis; St. Louis Medical College, 1888; an Affiliate Fellow of the American Medical Association; aged 73; died, May 5.

Thomas P. Matheny, Bardwell, Texas; Dallas Medical College, 1903; aged 73; died, July 9, in the Municipal Hospital, Ennis, of coronary occlusion.

Spero M. Salpas, Chicago; University of Illinois College of Medicine, Chicago, 1917; aged 55; died, May 2, of cerebral embolism and mitral insufficiency.

Charles Alexander Ault, Enterprise, Ore.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1890; aged 76; died, July 31, of uremia.

Isaac Henry Clement, Marion, Ky.; University of Tennessee Medical Department, Nashville, 1885; aged 78; died, June 18, of coronary thrombosis.

Thomas Francis Taylor, San Diego, Calif.; Bellevue Hospital Medical College, New York, 1880; aged 83; died, May 21, of mesenteric thrombosis.

Charles Frederick Dorsey, Innisfail, Alta., Canada; University of Toronto Faculty of Medicine, 1908; aged 55; died, June 30, of heart disease.

Daniel Harris Baker, Gadsden, Ala.; Vanderbilt University School of Medicine, Nashville, Tenn., 1882; aged 79; died, July 29, of myocarditis.

William Frederick Edwards, Airdrie, Alta., Canada; McGill University Faculty of Medicine, Montreal, Que., 1907; aged 60; died, June 22.

Willis Pomeroy Polhemus, San Diego, Calif.; University of Michigan Homeopathic Medical School, Ann Arbor, 1881; aged 84; died, May 1.

Hugh Burns Hay, Chipman, N. B., Canada; University of the City of New York Medical Department, New York, 1887; aged 81; died, July 16.

Roderick Donald Dewar, Melbourne, Ont., Canada; McGill University Faculty of Medicine, Montreal, Que., 1908; aged 58; died, May 18.

Arthur Wellesley Allingham, Broadview, Sask., Canada; Trinity Medical College, Toronto, 1891; formerly mayor; aged 75; died, May 12.

Nathan E. Lawson, Oklahoma City; Hospital College of Medicine, Louisville, Ky., 1898; aged 66; died, May 7, of myocarditis.

Mary Cochran McIntyre, Roxbury, Conn.; University of Glasgow Medical Faculty, Scotland, 1909; aged 55; died, May 12.

John James McPherson, Castor, Alta., Canada; Queen's University Faculty of Medicine, Kingston, Ont., 1909; died, May 11.

Gordon Lemon McFarlane, Carbon, Alta., Canada; University of Toronto Faculty of Medicine, 1911; aged 50; died in May.

Joseph Lawrence Bettag, Kimball, S. D.; Marquette University School of Medicine, Milwaukee, 1924; aged 49; died, May 9.

Susan L. Halverson Lamb, San Francisco; State University of Iowa College of Medicine, Iowa City, 1885; aged 79; died, May 4.

Bureau of Investigation

ROBERT FAUDREE—MEDICAL IMPOSTOR

Charlatan Finds California Climate Unhealthy

The California State Board of Medical Examiners, under the direction of the secretary, Charles B. Pinkham, M.D., has for years maintained an extensive and efficient group of investigators. These special agents have long been a thorn in the side of impostors, irregulars and those who exceed their legal rights in practicing the healing arts in the state of California.

On June 28, 1940, T. P. Hunter, a special agent for the board, had occasion to investigate one Robert Gordon Faudree, who appears to have used at that time another name, Gilbert Gordon Faudree. He had appeared at the University of California Hospital at San Francisco and claimed to have attended the Louisiana State University School of Medicine and to have completed his medical course in India. While at the San Francisco hospital he wore a smock bearing the legend "Charity Hospital, New Orleans." He was described as being about 25 years of age, 5 feet 9 inches in height, weighing 160 pounds, and as having light brown hair, blue eyes and a sunburned complexion. He is said to have spoken with either a southern or a British accent. It seems that his principal attire was a green gabardine suit the jacket of which was double breasted and had brass buttons. He claimed that it was the yachting costume of the Bombay Yacht Club. He had also been observed wearing this jacket with white duck pants and also wearing a gold ring in the shape of a cobra, with green stones as eyes.

A San Francisco police report No. 338793 had been issued against him because on June 6 he had checked out from the University of California Medical School Library several magazines and books. While at the Medical School he claimed that his father was in charge of a hospital in Calcutta and that he was interested in observing obstetric cases. This apparently led to his receiving permission to sleep in one of the obstetric "ready" rooms. Since he made no attempts either to borrow money or to cash checks, his chief purpose in posing as a physician at the hospital seems to have been to obtain lodging.

With the permission of the hospital authorities, Faudree delivered an informal lecture at the nurses' home on the subject of medicine in India. He became friendly with two student nurses there and told them he was sailing for India on the *S. S. President Adams* on the 22d of June. He gave one of the girls the address of 39 Lahora Road, Calcutta, Bengal, India, as an address where he could receive mail. As a matter of fact, he had made no attempt to secure reservations on the *President Adams* but had made them for Calcutta on a Pan-American Airways plane, giving his address as the University of California Hospital.

By July 12 it had been intimated to the investigators that Faudree was located at the Mendocino State Hospital at Talmage, Calif. They also developed the information that his parents were located in Dayton, Ohio. By this time information had come from New Orleans that this individual was formerly an employee of the Charity Hospital of Louisiana under the name of Faudree de Fauche. He was an x-ray technician there from June 1, 1939, to March 9, 1940.

The investigators were able to locate him at the Mendocino institution where he had obtained employment commencing July 1 as a laboratory technician at a salary of \$160 per month less maintenance. He informed the superintendent of the institution that he had been referred there by the state board of health as an applicant for a temporary (noncivil service) appointment for the position.

At this time it developed that after he had left the employ of the Charity Hospital at New Orleans he went to San Francisco and stowed away on a freighter, which took him as far as Penang, but, not being allowed to land, he was returned to San Francisco June 1, about the time when he appeared at the University of California Medical School. In connection with

the position at the Mendocino State Hospital, he was issued a temporary laboratory technician's certificate on the basis of information, which he supplied, to the effect that he had attended the University of Calcutta, India, from September 1931 to June 1935, obtaining the degree of "B.Sc.Md.," had attended the School of Tropical Medicine in Calcutta from September 1935 to June 1939, when he obtained the degree "Doctor of Tropical Medicine," had thereafter worked in the Pathological Laboratory of the Carmichael Hospital, Calcutta, from June to October 1939, and claimed to have worked at the same institution as a "pathological intern" [sic]. He also claimed work in clinical diagnosis and claimed to have a provincial license in medicine in the province of Bengal, India.

On the basis of these facts it was decided to issue a complaint against Faudree for petty theft, and the special agent of the Board of Medical Examiners arrested him on July 24 in the laboratory of the Mendocino State Hospital, where he was able to recover the property which had been stolen from the Library of the University of California Medical School. "After intensive interrogation," Faudree admitted to the agent that he had never attended the University of Calcutta and that his whole story as to medical qualifications was false and, incidentally, that he had not intended to return the stolen property. He was booked at the Mendocino County Sheriff's office as No. 1259, and en route to San Francisco the agent had him booked again at the Sonoma County Sheriff's office as No. 6717.

Faudree appeared in the San Francisco municipal court before Judge Frank Dunn, in action 465612, on July 25, and pleaded guilty to petty theft (see clipping reproduced on this page). As the property had been recovered and

there was no indication of a previous record, either in California, Dayton, Ohio, his home town, or New Orleans, or in the Federal Bureau of Investigation, Judge Dunn imposed a sentence of six months in the county jail, which he suspended on condition that Faudree return to his parents' home in Dayton.

When apprehended, Faudree had in his possession a box of calling cards which he had had printed, and on which his name appeared with the prefix "Dr."

Robert Faudree may be only a first offender, but the ease with which he duped his victims might indicate previous experience or the likelihood of future performances.

The Alabama System.—On Feb. 19, 1875, the Alabama General Assembly passed a law designating the Medical Association of the State of Alabama as the state board of health and also designating county medical societies affiliated with the state medical association as boards of health for their respective counties. Thus Alabama became the first state in the Union to place its public health machinery beyond the political pale and to assure the people and its public health workers that the successful and competent performance of duty, and that alone, would determine continuance in service.—Baker, J. N.: *Alabama's Contribution to Public Health*, *Am. J. Pub. Health* 30:859 (Aug.) 1940.

From S.F. News - page 15 - issue of 7-25-40

'Scientist' Talks Himself Into Job—but Judge Has Final Say

Questioning Starts When Medical School Misses Its Books

Robert Gordon Faudree, 25, who

came here in June from

Dayton, O., went to the University

of California Medical School and

convicted the facts there that he

was a graduate of the University of

Calcutta and quite an expert in

laboratory work, obstetrics and

tropical diseases.

He gave around the school several

weeks, even delivering a lecture

on tropical diseases to student

nurses.

Then, according to Agent Hunter,

Faudree went to the Mendocino

State Hospital and talked himself

into a laboratory research job about

that time librarians at the U. C.

medical school missed about \$20

worth of books. Suspicion pointed

to Faudree, and the board of medical

examiners was asked to investigate

him.

Agent Hunter decided a little

straight-from-the-horse-mouth

action was called for. He took

Faudree to the Mendocino hospital and,

in effect, told Faudree "you're a faker."

Faudree admitted he'd never been

closer to Calcutta than Mendocino

County. And his wide knowledge of

medicine, he said, was acquired

while he worked for a short time

in a Florida laboratory where

Dunn found him guilty of petty

theft. (Faudree's job title appeared

as "Faudree de Fauche" in return

for his time in Dayton.)



ROBERT FAUDREE.

Newspaper account of Faudree's career in California.

Correspondence

MYASTHENIA GRAVIS

To the Editor:—In reading the report by Dr. Robert C. Moehlig on his case of myasthenia gravis recently published (*Myasthenia Gravis: Treatment by Implantation of Desoxycorticosterone Acetate Pellets*, *THE JOURNAL*, July 13, p. 123), I was struck by the fact that little effort was made to confirm the diagnosis of this rare and somewhat obscure disease. The rapid onset of symptoms over a period of seven days to a point of orthopnea and prostrating fatigue is certainly unusual in myasthenia gravis. It appears from the examination that the patient had bilateral ptosis, dysphagia, dysarthria and general weakness, all symptoms which are consistent with the diagnosis, but it is not clearly indicated that he had the primary symptom of myasthenia gravis, namely fatigue on muscular motion with recovery after rest. This, moreover, was not brought out by the Jolly reactions, nor is there a record of the other tests now commonly used to confirm the diagnosis. These tests are the "prostigmine test," devised by a number of workers to evaluate the effect of prostigmine when injected intramuscularly, electromyograms, ergograms and fluoroscopic studies of barium ingestion. The most important of these tests is the "prostigmine test," which should always be done if there is any doubt about the diagnosis and is particularly important in a case such as that described by Dr. Moehlig when the diagnosis may be not entirely clear. If one is to draw any conclusions in regard to any type of therapy, one should be certain that the patient under observation has the disease in question in an unmistakable and unequivocal manner.

One notes with interest, moreover, that the patient was given quinine as one of the forms of treatment. It has been well recognized in recent years that quinine is one of the drugs that will make the symptoms of myasthenia gravis more pronounced, whereas its pharmacologic antagonist, prostigmine, will improve the symptoms. There is a certain danger in using quinine, for the symptoms of myasthenia gravis may become so pronounced under medication with this drug that respiratory failure will ensue. Dr. Moehlig reports only "unpleasant effects" of this drug and does not make it clear what these effects were.

To evaluate any form of treatment in a disease such as myasthenia gravis is indeed difficult. The periods of remission may be acute and practically complete. Patients as seriously ill as the one described by Dr. Moehlig have been known to recover their normal state of health within a week or less. One would wish, therefore, before conclusions are drawn about the efficacy of a drug or glandular preparation to be not only as certain as possible in regard to the diagnosis of this unusual disease but also sure that the patient was not passing into a stage of remission rather than a stage of recovery due to a specific medication.

HENRY R. VIETS, M.D., Boston.

To the Editor:—I wish to call your attention to the dangerously misleading impression that might be read into Dr. R. C. Moehlig's report of a case of myasthenia gravis in *THE JOURNAL*, July 13. From the way in which the therapeutic trial of quinine is referred to in this report, one might easily deduce that the drug has been elsewhere reportedly used successfully in the treatment of this disease, especially since it was here administered together with aminoacetic acid. Actually, quinine is definitely contraindicated, as was reported by Kennedy and Wolf (*Arch. Neurol. & Psychiat.* 37:68 [Jan.] 1937). Later, Harvey showed that quinine has a curare-like action, as he reported in *THE JOURNAL*, April 22, 1939, page 1562, and thus its administration enhances the curare-like paralysis of myas-

thenia gravis. I have seen 10 grains (0.65 Gm.) of quinine produce an alarming state in a moderately severe case of myasthenia gravis.

It is regrettable that no mention is made of the use of prostigmine to verify the diagnosis of the case reported. As it is, the clinical course described can just as easily be interpreted as a textbook picture of nonfatal botulism. The abrupt onset is certainly more typical of botulism than of myasthenia gravis.

In any event, it is to be hoped that the further progress of the case will be reported, no matter what the outcome, so that one may learn whether the improvement reported was spontaneous or a direct result of the substitution therapy with desoxycorticosterone.

LEO D. FREYBERG, M.D., Granville, N. Y.

CHRONIC CARBON MONOXIDE POISONING

To the Editor:—Because of the number of cases of alleged chronic carbon monoxide poisoning which are getting into the courts, the article entitled "Carbon Monoxide—A Domestic Hazard, with Especial Reference to the Problem in West Virginia," by Harvey G. Beck, Wilmer H. Schulze and George M. Suter, which appeared in *THE JOURNAL*, July 6, page 1, deserves comment.

There is no question of the importance of true acute carbon monoxide poisoning which leads to coma and death or to complete recovery except for neurologic complications in rare instances. These authors imply that chronic carbon monoxide poisoning is a common cause of a great multiplicity of symptoms. In only one or two of their cases do the criteria given seem adequate to establish significant exposure to carbon monoxide. The number of patients in a similar environment who did not show any symptoms is not mentioned. In only two cases is the blood level of carbon monoxide hemoglobin mentioned, and in these cases the time after exposure is not stated. Figures are not given as to the actual concentration of carbon monoxide found in the localities in which persons were alleged to be exposed, although in one or two instances a dangerous concentration was said to have been found without the figure being stated.

Among the statements that seem open to question are the following: on page 2 "Coronary thrombosis has repeatedly been observed clinically and at autopsy as well as in experimental animals in states of carbon monoxide anoxemia"; on page 6 "The basal metabolism is uniformly low in carbon monoxide anoxemia," and the implication on page 3 that a red blood cell count of over 5,000,000 constitutes a polycythemia. Actually, the average red cell count for men is 5,400,000, and counts well over 6,000,000 are not infrequently encountered in healthy men.

The authors fail to give the criteria by which they exclude other etiologies for the symptoms mentioned. The fact that they mention specifically such a wide variety of diseases or syndromes simulated by these symptoms, including angina pectoris, multiple sclerosis, hemiplegia, tetany, neuroses, psychoses, cardiospasm, pylorospasm, spastic constipation, gastric achylia, nocturia, dysuria, anemia and polycythemia, to mention only a few, suggests that other diagnoses rather than carbon monoxide poisoning account for these symptoms.

Other conditions are much more important and common causes of the symptoms mentioned. The authors fail to present evidence that the symptoms mentioned were actually due to exposure to carbon monoxide. Carefully controlled experiments by Yandell Henderson and by the U. S. Bureau of Mines failed to show any significant sequelae from exposures to carbon monoxide not leading to prolonged unconsciousness.

EDWIN E. OSGOOD, M.D.

JOSEPH BEEMAN, M.D.

Portland, Ore.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

POLIOMYELITIS AND TONSILLECTOMY

To the Editor:—Some time ago I noticed an article in *The Journal* which tended to show that it was hazardous to do tonsillectomies during the fall season for the reason that it increased liability to the contraction of infantile paralysis, the latter disease being more prevalent at that season of the year. Is this the contention of specialists in general and has the contention been proved to a satisfactory degree? It has always seemed to me that more patients submit to tonsillectomy just before the beginning of the school year in September than at any other time. Any information you can give me along this line will be appreciated.

M.D., Iowa.

Because of the importance of this question it was submitted to two consultants, whose respective replies follow:

ANSWER.—There is little doubt that tonsillectomy predisposes to poliomyelitis of the bulbar type only. This predisposition has been noted whenever it has been sought for in the epidemics of the last five years. This phenomenon was first reported by Aycock and Luther in 1929 (*New England J. Med.* 200:164 [Jan. 24] 1929). These authors noted that, of thirty-six children who had contracted poliomyelitis and who also had tonsillectomies within a year, the operation had been performed from seventeen to eighteen days preceding the onset of disease in sixteen. This interval corresponds exactly with the known incubation period of the disease in man.

In most epidemics of poliomyelitis the bulbar type makes up but 10 to 15 per cent of the total cases. It is thought that tonsillectomy bares nerve endings in the tonsillopharyngeal area, allowing the virus to enter the nervous system over these free nerve endings, it being assumed that such a person was a carrier of the virus at the time the operation was performed. That human carriage of virus is not infrequent has been shown by several investigators. Not only is the virus probably carried in the nasopharynx in certain persons, but it is also harbored in the gastrointestinal secretions, certainly in the active cases of convalescents of the disease. It has been detected in two cases in sewage.

The most recent and complete report on this question is to be found in the article by Stellerman and Fisher, "Acute Bulbar Poliomyelitis Following Recent Tonsillectomy and Adenoidec-tomy," in the *American Journal of Diseases of Children* (56:778 [Oct.] 1938).

Experimental studies by Sabin on monkeys (*THE JOURNAL*, Aug. 13, 1938, p. 605) have shown that the tonsillopharyngeal region is more highly sensitive to poliomyelitis virus than many regions of the body, and the type of the disease so produced when experimental is bulbar and bulbospinal. This author was successful in producing experimental poliomyelitis by first removing tonsils surgically and then spraying virus into the throat. The experimental disease was produced only when spray containing the virus was administered to the experimental animal within a few hours after surgical removal of the tonsils.

Trauma elsewhere in the oral cavity may possibly predispose to poliomyelitis infection. A report by Gard (Nouvelles recherches sur l'épidémiologie de la poliomyélite, Office international d'hygiène publique 30:933 [May] 1938) states that two cases of poliomyelitis followed extraction of teeth, in both of these cases the onset of disease corresponding to the known incubation period of poliomyelitis in man. There has been no confirmation as yet.

It would appear that in the absence of an epidemic there is little or no more hazard of submitting children to tonsillectomy during the summer and fall months than at any other time.

In light of the available information, one would be inclined to defer tonsillectomy in the presence of an epidemic.

ANSWER.—Clinically there does not appear to be any evidence that a tonsillectomy is a predisposing factor to infantile paralysis. This is borne out by the great number of operations performed in the fall of the year without any apparent material increase in the number of cases of infantile paralysis.

Although a number of investigators have reported, in different series of observations, a small group of cases of infantile paralysis of the bulbar type that occurred at varying intervals after tonsillectomy, it is a question whether or not this finding is coincidental. Sabin (*Experimental Poliomyelitis by the Ton-*

sillopharyngeal Route, *THE JOURNAL*, Aug. 13, 1938, p. 605), in experimental work on monkeys, has shown that bulbar paralysis can occur more readily after a tonsillectomy, progressing along the local peripheral nerves. To occur postoperatively the virus would have to be present in secretions or in the tonsils during the operation, and infection would be facilitated by any procedure involving injections or postoperative suturing.

From these observations it can be deduced that it is unwise to perform a tonsillectomy in the presence of a local epidemic of this disease, but it is questionable in the opinion of most men whether one should adopt a "rule of thumb" to avoid a tonsillectomy in the fall merely on the ground that there is a greater prevalence of poliomyelitis at that time.

Concerning the question of the incidence of tonsillectomies, certain localities show a preponderance of operations immediately following the closing of the school term, with a second but smaller frequency peak in September. This varies in different parts of the country.

COLOR BLINDNESS

To the Editor:—A white man aged 55 shows complete red-green color blindness with the Ishihara chart. However, he passes the Jennings color test perfectly. He has never noticed any difficulty in recognizing colors. He worked in millinery and in piece goods departments where matching colors is essential, and he was acknowledged to be one of the best color matchers in the store. He has no difficulty with traffic lights, recognizing the red, green and yellow lights instantaneously. Can you explain why he should be classed as red-green color blind, and if color blindness was a test for employment would the Ishihara or the Jennings test be accepted? Also, can you explain why he should be red-green color blind with one test and not with the other?

M.D., Tennessee.

ANSWER.—It is common knowledge that an anomalous deuteranope will be unable to read the red-green figures in the Ishihara and Stilling charts and still be able to pick out red and green colors accurately. This is due to the fact that the colors in the Ishihara and Stilling charts are borderline, the greens being almost gray, and that is the point at which these patients have difficulty. The latest edition of the Ishihara chart is not satisfactory and only the first edition should be used for testing. It is reliable for most color blind patients. The army has discarded both the Ishihara and Stilling charts for color blind testing because of their failure in cases such as the one described and now relies entirely on the old fashioned skeins of yarn for testing color blindness.

FECAL STREPTOCOCCI AND URTICARIA

To the Editor:—We have a patient with chronic urticaria of about sixteen months' duration. She has had the usual skin sensitization tests and has been getting theelin and nonspecific desensitization treatments with typhoid vaccine. The only specific desensitization treatment has been with a vaccine of *Streptococcus viridans* found in the stool in nearly pure culture. The use of this vaccine subcutaneously in the proper dosage has resulted in the disappearance of the urticarial eruption except for the appearance of a few lesions when the interval between treatments has been too prolonged, and the improvement in her general condition has kept pace with the cutaneous improvement. What treatment, if any, might be available to eradicate the intestinal focus of sensitization? This method of treatment, if successful, might obviate the necessity for hyposensitization treatment with much earlier and more satisfactory results. The positive culture of *Streptococcus viridans* was obtained from an ordinary stool, and it would seem that the infection might be in the colon or lower part of the colon. I have had in mind the use of gentian violet coated capsules prepared so as to dissolve in the colon, *Bacillus acidophilus*, sulfanilamide or some derivative.

M.D., Arizona.

ANSWER.—*Streptococcus viridans* is so commonly found in the stools of human beings that its importance in such a cutaneous condition seems doubtful.

Much has been said and written concerning the intestine as a focus in chronic diseases. Often apparent relationship between poor intestinal elimination and such conditions as arthritis, chronic cutaneous disease and general debility seems to be at hand. No adequate proof of such a relationship, however, is available. True enough, when proper bowel function is established, or even after intestinal irrigations are instituted, improvement in the systemic condition is sometimes noted. In individuals with inflammatory diseases of the bowel, such as ulcerative colitis, systemic complications like those mentioned may occur. In these cases the eradication of the colitis will frequently result in the disappearance of the cutaneous or other systemic manifestations. However, when no bowel disease is noted and only *Streptococcus viridans* in the stool is present, the eradication of this streptococcus, changing the intestinal flora through diet and the like, will rarely if ever have any effect on the cutaneous condition. In short, it is most difficult to establish any relation between the presence of this organism and a cutaneous condition such as urticaria.

However, bacterins prepared from organisms isolated from the stools, even though actual lesions in the bowel are absent,

have been commonly used. It has also been a common practice to change intestinal flora by giving acidophilus milk, but such a change is usually temporary. Of the various drugs mentioned, gentian violet could be used without probable harmful effect. All in all, it seems rather doubtful that the cutaneous condition could be aided much by removing *Streptococcus viridans* from the stool or by desensitizing the patient against it.

The best and most discussed method as well as the one yielding apparent results in some cases so far as eradicating the streptococci seems to be by the injection of a bacterin prepared from the streptococci in individual cases.

VITAMIN D FOR ADULTS

To the Editor:—At a recent postgraduate institute a speaker stated that the administration of vitamin D in the form of cod liver oil, viosterol and the like should be restricted to children and is contraindicated for all adults, as this vitamin causes demineralization of bones. Will you kindly advise me whether this opinion is commonly held true or not?

Calvert R. Toy, M.D., New Brunswick, N. J.

ANSWER:—There is no evidence that a moderate amount of vitamin D causes demineralization of the bones of adults or produces any adverse effects. Indeed there is some evidence that reasonable amounts of vitamin D, such as 400 U. S. P. units daily, may be beneficial, particularly during adolescence. While no need for supplies of vitamin D other than the effect produced by ordinary exposure to sunlight has been shown for the average normal adult, there is considerable evidence that many women require vitamin D in order to remain in calcium equilibrium during pregnancy and lactation.

VASECTOMY AND PERSISTENCE OF SPERMATOZOA

To the Editor:—What observations have been made as to the length of time spermatozoa can persist in the seminal vesicles when their testicular source of supply has been blocked by a vasectomy? I recently have seen two patients who had a vas resection performed over a year ago but who continue to show occasional nonmotile spermatozoa on microscopic examination of the ejaculate. I can hardly conceive of an opening in the vas so small as to allow only the passage of a few spermatozoa; neither can I believe that spermatozoa will continue to be present in the vesicles for as long a period as a year.

M.D., Oklahoma.

ANSWER:—The consensus among practicing urologists is in effect that spermatozoa may remain in the seminal vesicles after a bilateral vasectomy for as long a period as from twelve to sixteen weeks. This depends on the frequency of sexual intercourse. Some men are of the opinion that sperms lose their motility at the end of about forty-five or fifty days after vasectomy. Most important in a situation such as this is to be definitely sure that a vasectomy has actually been performed and that the cut ends of the vas deferens were widely separated. There are instances in which the vas was simply cut and not widely separated, the vas grew together and the lumen was reestablished and hence sperms were found. A similar situation may also occur in cases in which subcutaneous ligation of the vas has been performed.

CONGENITAL ENTROPION

To the Editor:—I have recently seen a 3 months old baby with bilateral entropion of the lower lids, which the mother states has been present for about two months. There is only slight inflammation of the bulbar conjunctiva and apparently there are no subjective symptoms. The baby is quite plump, there is apparently no edema of the lids and the urine is normal. Please suggest treatment and prognosis without treatment.

Curtis M. Galt, M.D., Manteca, Calif.

ANSWER:—Congenital entropion is by no means a rare condition and usually under conservative treatment relieves itself after a short period of from three to six months. If the lashes are so turned in that they strike both the conjunctiva and the cornea, irritation of these tissues may call for more active treatment. A palliative measure which has good results is the use of adhesive tape to pull the lid out. The upper portion of the tape should be placed just below the lash line and as the lid is pulled away from the eyeball the remainder of the strip is pasted on the cheek. If such procedures are inadequate, surgery may be indicated. The simplest surgical procedure is the one made so well known by Dr. Ziegler of Philadelphia, which is as follows: Just below the lash line on the surface of the skin, small cautery punctures are made throughout the extent of the entropion. When these scars heal there is definite tendency for the lid to turn out and the skin surface, after a short time, shows no scarring. Other surgical procedures are the removal of a strip of skin below the lash line and connecting of the incised area. At times it may be necessary to remove a portion of the orbicularis muscles for the best effect. As a rule, the prognosis in this type of entropion is good without treatment.

VISUAL DISTURBANCES FROM DIGITALIS

To the Editor:—I digitalized a man aged 74 with generalized arteriosclerosis and chronic auricular fibrillation. Owing to an error in reading his weight on a new scale, I gave him in two days about 0.3 Gm. of digitalis over that required on the basis of 0.1 Gm. per 10 pounds (4.5 Kg.) of body weight. He had mild nausea and vomited once, but his most troublesome toxic symptom, which has persisted two weeks without amelioration, is green vision, especially when he looks at lights. I stopped the maintenance dose for five days, then put him back on 0.1 Gm. a day. Is this toxic effect dangerous? Does it cause any permanent damage? Can I do anything to rid him of it? How long, on the average, do such visual disturbances persist if digitalis maintenance doses are continued?

M.D., Ohio.

ANSWER:—Disturbances of vision, especially seeing various colored lights and occasionally transient blindness, has long been noted to occur during the administration of digitalis. When it occurs, it is evidence of excess dosage, although on occasion it may occur with small doses as a result of idiosyncrasy. No permanent harmful effects will result from this disturbance in vision provided the digitalis is discontinued. It is a definite indication that digitalis must be stopped and discontinued until all symptoms have disappeared. Care should be employed in readministering digitalis to such patients, since the symptoms can easily recur. It is a wise procedure to explore other varieties of digitalis leaf, since it occasionally happens that the patient is more tolerant to a different species of digitalis leaf or to some squill product. There is no specific antidote for this complication other than the prompt discontinuance of the digitalis. It must be recalled that digitalis has a large cumulative effect and the reduction in dosage alone may not be sufficient to reduce the concentration of digitalis in the body tissues. This accounts for the continuation of the symptoms with the administration of daily doses of 0.1 Gm. It should be reemphasized that the digitalis should be stopped entirely when this symptom is found.

PROBABLE FRÖHLICH SYNDROME

To the Editor:—A boy who was 14 years old on November 27 is 5 feet 3 inches (160 cm.) tall, weighs 145 pounds (66 Kg.), is from 34 to 37 inches (86 to 94 cm., expiration-inspiration) around the chest, 32 inches (81 cm.) around the waist and 40 inches (102 cm.) around the trochanters. The inseam is 30 inches (76 cm.). He has developed no secondary sex characteristics. The testes and penis are small. He is a typical moderately fat boy type. He excels in school work, has a brilliant personality and is not feminine in the least way. He is well liked by his playmates. His mother is about 5 feet 4 inches (163 cm.) tall and comes from an average size normal family. The father is 6 feet 1 inch (185 cm.) tall and weighs about 235 pounds (107 Kg.). He has always been well developed muscularly and always a little overweight. He played college football. He did not develop sexually until he was almost 17 years old, and although his sex organs have always been small he has always been virile. The father's hair became thin at 21 years of age, when hair began to develop all over the body. The paternal grandfather was of the same type, with two uncles and two cousins of similar body build. Do you think it would be advisable to give the boy some growth stimulating hormone? If so please advise which preparations you consider best.

M.D., Iowa.

ANSWER:—This description fits Fröhlich's syndrome, although the actual size of development of the genitalia is not definite. Undoubtedly such a patient ought to be placed on a reducing diet in order to bring the obesity under control. Endocrine therapy is not necessary or advisable for this purpose. Whether or not any growth promoting hormone should be used would depend on the rate at which the boy has been growing in the last year and on whether x-ray study of the femurs showed that the epiphyses are still nonunited so that growth can continue. If he has not been growing approximately 2 inches (5 cm.) in the last year and if the epiphyses are still not united, then growth promoting pituitary hormone would probably be indicated.

SEDIMENTATION TEST IN RHEUMATIC FEVER

To the Editor:—What is the prevailing attitude now on using the sedimentation rate as a criterion for regulating activity in adults or children following an attack of acute rheumatic arthritis?

I. H. Wilson, M.D., Worthington, Minn.

ANSWER:—There appears to be general agreement among physicians interested in rheumatic fever that a rapid sedimentation rate is of considerable importance in the evaluation of the presence of active rheumatic fever. It is perhaps the most valuable single nonspecific laboratory test. An elevated white blood count and a prolongation of auriculoventricular conduction time by electrocardiogram are also helpful. Other causes of a fast sedimentation rate must be considered prior to its acceptance as indicating active rheumatic fever. It must also be remembered that the sedimentation rate may remain fast for two or three weeks following infection of the upper respiratory tract in non-rheumatic as well as rheumatic individuals.

There is, however, a difference between the regulation of physical activity of rheumatic fever patients and the evaluation of the presence or absence of active rheumatic fever. The sedimentation rate is generally valuable in determining the latter. Many other factors must be considered in directing the physical activity of a patient with recent clinical rheumatic fever. In general, most workers strive to restrict the patient's activity, even to give bed rest, as long as rheumatic fever continues to be active. Laboratory tests may be persistently abnormal without clinical symptoms, indicating a continuation of mild rheumatic fever. This period of active rheumatic fever may last for months or even years, and hence the problem is a difficult one. The sedimentation rate is, however, a valuable guide in following the course of the active rheumatic fever in a given case.

MERCURIAL DISINFECTANTS

To the Editor:—We recently had in our office a detail man who made the statement that the United States Public Health Service refused to accept mercuric cyanide as a potent antiseptic even if used in a solution of 1:300 for fifteen minutes. He made the statement that urethral catheters could not be sterilized by the drip method if mercuric cyanide 1:500 was used. This, he said, was also true of urethral catheters which were placed in mercuric cyanide 1:500 and left for thirty minutes. He stated that the interior of the catheter continued to yield viable staphylococci when it had been so infected. Please give us what data you have with regard to this subject.

W. G. Schulte, M.D., Salt Lake City.

ANSWER:—Not only mercuric cyanide but also other mercurial disinfectants, when used in the concentrations usually recommended, were found by Brewer (*THE JOURNAL*, May 20, 1939, p. 2009) not to kill bacterial spores exposed to the disinfectants for twenty-four hours. Nonsporulating bacteria are more easily killed. Instruments with hinges, crevices or canals are not likely to be sterilized by chemical solutions unless there is a forced circulation of the solutions through them. The mercurial compounds are known to be much more bacteriostatic than bactericidal. Under certain circumstances they may be useful antiseptics but are not good sterilizing agents.

CHAULMOOGRA OIL FOR LARYNGEAL TUBERCULOSIS

To the Editor:—Is the painting of the larynx with chaulmoogra oil of recognized value in the treatment of tuberculous laryngitis and, if so, would it be likely to cause an acute hemorrhagic nephritis over a period of about one month?

C. W. Atherton, M.D., Marshall, Ill.

ANSWER:—It is debatable whether chaulmoogra oil is of real value in the cure of tuberculous laryngitis. Certainly the enthusiasm for this therapy is not what it once was, and few have achieved the excellent results of some of the early reporters.

Spencer believes that the oil has some value as a mild, palliative and perhaps curative remedy; Myerson, however, who also has had a large experience, is convinced that the oil does not have curative effect but is of value as a temporary soothing and cleansing agent. He does not believe that any larynx which it has apparently cured would not have been healed without it.

The results in animal experimentation have not been remarkable.

It is not likely that chaulmoogra oil acts as the cause of acute hemorrhagic nephritis. True, injections of sodium hydnocarpate, a closely related compound with similar actions, has been reported to have produced albuminuria and hematuria in rabbits and dogs. Reports of such toxic effects in man, however, when the drug is used locally, as in the case of tuberculous laryngitis, are wanting.

References:

- Jackson, Chevalier, and Jackson, C. L.: *The Larynx and Its Diseases*, Philadelphia, W. B. Saunders Company, 1937.
Lukens, R. M.: *Laryngeal Tuberculosis*, in Jackson, Chevalier, and Coates, G. M.: *The Nose, Throat and Ear and Their Diseases*, Philadelphia, W. B. Saunders Company, 1929.
Spencer, Robert: *Laryngeal Tuberculosis*, Philadelphia, J. B. Lippincott Company, 1927.

SWIMMING IN PREGNANCY

To the Editor:—Is there any objection to a primipara, apparently in good health, going swimming? I have given advice, perhaps old fashioned, against swimming because of the sudden shock to a person who is already carrying a double load.

M.D., New York.

ANSWER:—There is no serious objection to a healthy primipara swimming during the first seven months of the gestation. The water in which the patient swims should be relatively clean and warm. The water at the crowded beaches or large urban centers on hot summer days is usually contaminated and is not a desirable place for the pregnant patient. Lower genital tract infections can and do occur in such environments.

HYPERKERATOTIC EPIDERMOPHYTOSIS

To the Editor:—A woman aged 54 has had a dermatitis of both hands and feet for twenty-six months. This was diagnosed as epidermophytosis by the family physician and a dermatologist. She received roentgen treatments every two weeks for eight months before consulting a specialist. He treated her with potassium permanganate and also various ointments containing coal tar products and salicylic acid with no results. She has been using numerous proprietary drugs and had "shots" given by a cultist. I saw her about four weeks ago, at which time the hands were covered on the palms by thickened tough skin which, when removed, left a red sensitive surface which itches and burns. The patient was off work as a beauty operator for five months while the lesions were in the weeping stage but noticed slight improvement. No cutaneous tests have been done; the blood count was normal except for 11,200 white cells, with a normal differential count. The only improvement followed accidental use of formaldehyde on the hands. What tests would you suggest? Would formaldehyde be safe to use and if so what strength? Would sodium thiosulfate or any other form of medication offer anything? Would roentgen therapy be safe to use again in combination with local fungicides?

M.D., Indiana.

ANSWER:—As the patient's work is that of a beauty operator, one might suspect an occupational dermatitis if her feet were not also involved. In cases of this type it is difficult to make a positive diagnosis, but from the history given the condition is most probably a hyperkeratotic type of epidermophytosis. In all hyperkeratotic lesions on the palms and soles the possibility of previous arsenic ingestion should be considered. The patient should not have any more radiotherapy. Sodium thiosulfate 15 grains (1 Gm.) several times a week may prove to be of value. Warm soaks twice daily in a solution of sodium baborate followed by the application of salicylic acid and benzoic acid ointment should also prove to be of benefit. The first ointment should consist of salicylic acid 1 part, benzoic acid 2 parts and rosewater ointment and petrolatum to make 30 parts. Later the strength of this ointment can be doubled.

ACID AND ALKALI BURNS

To the Editor:—What is the present method of treating industrial caustic burns?

M.D., Mississippi.

ANSWER:—E. C. Davidson (*Ann. Surg.* 85:481 [April] 1927) made an experimental study of the treatment of acid and alkali burns. He concluded that "the results obtained in the treatment of experimentally produced alkali and acid burns were decidedly better when the caustic agent was removed by dilution with water than when rendered inert by neutralization. When treatment by neutralization is employed it should only be employed after the maximum amount of the caustic has been removed by thorough washing."

CONCERNING RADIATION AND HEREDITY—DIAGNOSTIC X-RAY AND FETAL ABNORMALITIES

To the Editor:—On page 1836, *The Journal*, Nov. 27, 1937, a physician asks to be enlightened on the chances a woman has of producing normal children when fertility has been temporarily suspended by x-rays and radium. Your answer states that "her chances for having normal children are just as good as those of women who have not received radiation therapy." This answer is correct as far as the immediate offspring is concerned; but injury may become manifest in the progeny of her children. Not sufficient time has elapsed to observe whether or not the human race is just as susceptible to such remote injuries as numerous animal species (among them animals as closely related to us as mice). The next sentence of your answer reads "There has been controversy on this subject, but the consensus is that radiation therapy applied before fertilization of an ovum does no harm." This too calls for some qualification. To quote just one of the authentic dissenting opinions I refer to Colwell and Russ, who advise strongly against temporary sterilization of women who may afterward bear children (*X-Ray and Radium Injuries*, London, Oxford University Press, 1934). More recently at least four prominent American authors have gone on record as being of the same opinion.

On page 2455, *The Journal*, June 10, 1939, the question is raised whether diagnostic x-ray exposures during pregnancy may cause fetal monstrosities. After setting forth the conventional teaching that diagnostic x-ray procedures during pregnancy, if not applied in unduly large quantity, do not harm the child or the ovaries, *The Journal* continues "Only recently have any objections been heard to the foregoing statement, but these are from abroad and are deductions from experiments on plants." The objections originated in the United States and are based primarily and mainly on animal experiments. (Muller, H. J.: *Röntgen Rays and Heredity* in Otto Glasser's book "The Science of Radiology," Springfield, Ill., Charles C. Thomas, 1933). These objections are made in view of possible damage to later generations. The subject matter underlying both these queries and their answers, namely, radiation and heredity, is involved and complex. At the same time it is of great practical importance to every physician who applies or has others apply x-rays for diagnosis and treatment, even though this importance may not be sufficiently appreciated. I have made an attempt to present the subject at greater length and in nontechnical language in my article "The Importance of a New X-Ray Effect for Our Daily Diagnostic and Therapeutic X-Ray Work" (*New York State J. Med.*, Aug. 1, 1940). An extensive bibliography can be found in this article.

Siegfried W. Westing, M.D., Brooklyn.

Medical Examinations and Licensure

COMING EXAMINATIONS

BOARDS OF MEDICAL EXAMINERS

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in *THE JOURNAL*, August 31, page 800.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Parts I and II, Sept. 11-13, to be given in medical centers having five or more candidates desiring to take the examination. Part III, Baltimore and New York during October and Boston during November. Exec. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Written*. Various centers, Feb. 20. Final date for filing application is December 21. *Oral*. Cleveland, May 31-June 1. Final date for filing application is April 1. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written*. Various centers, Oct. 28. Applications must be on file not later than Sept. 16. *Oral*. Chicago, Dec. 6-7. Applications for Group A must be on file not later than Nov. 1. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: Chicago, Oct. 18-19. Sec., Dr. R. Glen Spurling, 404 Brown Bldg., Louisville, Ky.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: Part I Group B examinations, locally, Jan. 4, 1941, at 2:00 P. M. Part II, Groups A and B, Cleveland, Ohio, June 1941, immediately prior to opening of A. M. A. meeting. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh, Pa.

AMERICAN BOARD OF OPHTHALMOLOGY: *Oral*. Cleveland, Oct. 5. *Written*. Various centers, March 8. *The only written examination during 1941*. Applications must be on file not later than Dec. 1. A special oral and clinical examination will be held on the Pacific Coast during 1941 providing there will be enough candidates to warrant it. Applications for this examination should be on file not later than Sept. 15. Sec., Dr. John Green, 6830 Waterman Ave., St. Louis.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: *Oral and written*. New Orleans, January 1941. Final date for filing application is November 15. Sec., Dr. Fremont A. Chandler, 6 N. Michigan Ave., Chicago.

AMERICAN BOARD OF PEDIATRICS: New York, March 30-31. Following the Region I meeting of the American Academy of Pediatrics. Chicago, May 18. Following the Region III meeting of the American Academy of Pediatrics. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: *Oral*. New York, December 18-19. Final date for filing application is October 8. Sec., Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: Boston, Sept. 26-29. Sec., Dr. Byrl R. Kirklín, 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Written*. Part I. Various centers, October 21. Final date for filing application is September 15. Sec., Dr. J. Stewart Rodman, 225 S. Fifteenth St., Philadelphia.

AMERICAN BOARD OF UROLOGY: *Oral and Written*. Chicago, February 1941. Applications must be on file not later than Oct. 15. Sec., Dr. Gilbert J. Thomas, 1009 Nicollet Ave., Minneapolis.

Florida June Report

Dr. William M. Rowlett, secretary, Florida State Board of Medical Examiners, reports the written examination for medical licensure held at Tampa, June 17-18, 1940. The examination covered ten subjects and included 100 questions. An average of 75 per cent was required to pass. Eighty-one candidates were examined, seventy-eight of whom passed and three failed. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
George Washington University School of Medicine.....	(1932)		1
Georgetown University School of Medicine.....	(1935, 3)		3
Emory University School of Medicine.....	(1937), (1940, 6)		7
University of Georgia School of Medicine (1937), (1939), (1940, 8)			10
Northwestern University Medical School.....	(1940), (1940)*		2
Rush Medical College.....	(1924), (1937), (1938)		3
University of Illinois College of Medicine (1923), (1937), (1940)			3
Indiana University School of Medicine.....	(1938)		1
University of Kansas School of Medicine.....	(1930)		1
University of Louisville School of Medicine.....	(1939)		1
Louisiana State University School of Medicine.....	(1940)		1
Tulane University of Louisiana School of Medicine (1932), (1940, 3)			4
Johns Hopkins University School of Medicine.....	(1926), (1933)		2
University of Maryland School of Medicine and College of Physicians and Surgeons.....	(1932)		1
Harvard Medical School.....	(1937)		1
Tufts College Medical School.....	(1939)		1
University of Michigan Medical School.....	(1938)		1

Wayne University College of Medicine.....	(1940)	1
University of Minnesota Medical School.....	(1928), (1931)	2
University of Nebraska College of Medicine.....	(1928)	1
Albany Medical College.....	(1937)	1
Columbia University College of Physicians and Surgeons.....	(1917), (1921), (1935), (1940)	4
Cornell University Medical College.....	(1928)	1
Fordham University School of Medicine.....	(1919)	1
Long Island College Hospital.....	(1929)	1
Long Island College of Medicine.....	(1938)	1
New York Medical College, Flower and Fifth Avenue Hospitals.....	(1938)	1
New York University College of Medicine.....	(1936)	1
Duke University School of Medicine.....	(1937), (1940, 2)	3
Starling-Ohio Medical College.....	(1914)	1
Ohio State University College of Medicine.....	(1936)	1
University of Cincinnati College of Medicine.....	(1937), (1938)	2
Jefferson Medical College of Philadelphia.....	(1938)	1
Temple University School of Medicine.....	(1935), (1940)	2
University of Pennsylvania School of Medicine.....	(1937)	1
Meharry Medical College.....	(1938), (1940, 3)	4
University of Tennessee College of Medicine (1931), (1937, 2)		3
Vanderbilt University School of Medicine.....	(1928)	1
Friedrich-Alexanders-Universität Medizinische Fakultät, Erlangen.....	(1922)	1

School	FAILED	Year Grad.	Number Failed
Harvard Medical School.....	(1917)		1
University of Michigan Medical School.....	(1925)		1
University of Virginia Department of Medicine.....	(1929)		1

* This applicant has received the M.B. degree and will receive the M.D. degree on completion of internship.

Tennessee June Report

Dr. H. W. Qualls, secretary, Tennessee State Board of Medical Examiners, reports the written examination for medical licensure held at Knoxville, Memphis and Nashville, June 14-15, 1940. The examination covered ten subjects and included 100 questions. An average of 75 per cent was required to pass. One hundred and eighteen candidates were examined, 117 of whom passed and one failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of Arkansas School of Medicine.....	(1940) 85.8,		90.2
Howard University College of Medicine.....	(1939)		88.9
Emory University School of Medicine.....	(1938)		87
Northwestern University Medical School.....	(1930)		88.1
(1939) 85.3			
Washington University School of Medicine.....	(1940)		86.3
Temple University School of Medicine.....	(1940)		89.1
University of Pennsylvania School of Medicine.....	(1940)		92.5
Meharry Medical College.....	(1940)		83.5
84.3, 85.3, 85.4, 85.5, 85.5, 85.6, 85.7, 85.9, 86.1, 86.9, 86.9, 87.1, 87.2, 87.3, 87.4, 87.6, 87.6, 87.7, 88, 88.1, 88.1, 88.1, 88.5, 88.5, 88.7, 88.8, 88.9, 88.9, 89.1, 89.3, 89.4, 89.8, 90.4, 91, 97.2			
University of Tennessee College of Medicine.....	(1940)		86.1
86.8, 87.3, 87.3, 87.4, 87.4, 88, 88.7, 89.1, 89.1, 89.5, 89.6, 89.6, 89.6, 90.7, 90.9, 91.6			
Vanderbilt University School of Medicine.....	(1940)		83.3
84.7, 84.9, 85.9, 86.3, 86.9, 87.4, 87.4, 87.5, 87.8, 87.9, 87.9, 88.1, 88.3, 88.3, 88.3, 88.4, 88.4, 88.4, 88.6, 88.6, 88.7, 88.7, 88.8, 88.8, 88.9, 89, 89, 89, 89.1, 89.2, 89.3, 89.3, 89.4, 89.4, 89.5, 89.6, 89.6, 89.7, 89.8, 89.9, 90, 90.1, 90.2, 90.3, 90.4, 90.6, 90.9, 91.6, 92, 92.2			
Medical College of Virginia.....	(1938)		86.8
University of Toronto Faculty of Medicine.....	(1938)		91.1, 93.8

School	FAILED	Year Grad.	Number Failed
Meharry Medical College.....	(1929)		1

Sixteen physicians were licensed to practice medicine by reciprocity from May 28 through July 27. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
George Washington University School of Medicine.....	(1933)		Ohio
University of Georgia School of Medicine.....	(1934), (1937)		Georgia
University of Louisville School of Medicine.....	(1939)		Kentucky
Tulane University of Louisiana School of Medicine.....	(1929)		Louisiana
Johns Hopkins University School of Medicine.....	(1926), (1937, 2) Maryland		
Columbia University College of Physicians and Surgeons.....	(1936)		New York
University of Cincinnati College of Medicine.....	(1930)		Ohio
Hahnemann Med. College and Hospital of Philadelphia.....	(1934)		Penna.
University of Pennsylvania School of Medicine.....	(1931)		Penna.
University of Tennessee College of Medicine.....	(1939)		Mississippi
University of Texas Faculty of Medicine.....	(1926)		Texas
Medical College of Virginia.....	(1917)		Maryland
University of Virginia Department of Medicine.....	(1939)		Virginia

Book Notices

Proximate Composition of American Food Materials. By Charlotte Chathfield, Foods and Nutrition Specialist, and Georglan Adams, Associate Food Chemist, Foods and Nutrition Division, Bureau of Home Economics, United States Department of Agriculture Circular No. 549. Paper. Price, 15 cents. Pp. 92. Washington, D. C.: Supt. of Doc., Government Printing Office, 1940.

The comprehensive tables prepared by Atwater and Bryant on the chemical composition of foods have not been revised since 1906. It is appropriate therefore that the Department of Agriculture again should issue an authoritative booklet on the composition of foods. The data in this report were obtained chiefly from published records of analysis that have been made in many laboratories by different investigators using different methods. A considerable number of results of unpublished analyses likewise are included, but the authors state that for the most part they have studied the original records critically. Data are provided for about 2,000 foods. The information includes the name of the food, the nature of the sample, the basis of the analytical figures, the percentage of refuse and of the constituents of the edible portion in terms of water, protein, fat, ash, total carbohydrates, fiber, sugars, starch and acid, and fuel value per hundred grams and per pound. The tables are more conveniently arranged than they have been in many compilations because the individual foods are listed alphabetically. The report includes many data on the composition of vegetables, fruits and meats heretofore available only in separate publications. The tables will prove useful for dietary calculations and invaluable for the approximate estimation of dietary ingredients such as is necessary in formulating a diet for persons with diabetes. There is a separate table listing fruits and vegetables in groups containing about 3 per cent carbohydrate, about 6 per cent carbohydrate and so on, according to a familiar classification.

Unlike the compilation by Atwater and Bryant, the present tables do not provide a range of values or the number of analyses. While the authors state in their introductory remarks that variations are to be expected in foods, the tables provide only the average values, and this fact may be easily overlooked. Raw potatoes, for example, are stated to contain 19.1 per cent of total carbohydrates. The tables of Atwater and Bryant show the total carbohydrates for this food to be from 13.5 to 27.4 per cent, with the average of 136 analyses as 18.4 per cent. In this connection the title of the present report may be especially appropriate if "proximate" is taken to mean "almost correct."

It would be helpful to many users of such a compilation if somewhat larger type could be used for the tables. While the present compilation may be of inestimable value, particularly for the formulation of diets for diabetic patients, there are other data which are assuming great importance for the physician. The amount of calcium, phosphorus and iron in foods would constitute useful knowledge. Even data on the relative amounts of sodium and potassium in foods is coming to assume importance in the modern dietary management of Addison's disease. Perhaps such data may be made available in future compilations just as there now is a fairly recent compilation of data regarding the vitamin content of foods.

Neoplastic Diseases: A Treatise on Tumors. By James Ewing, A.M., M.D., Sc.D., Professor of Oncology at Cornell University Medical College, New York City. Fourth edition. Cloth. Price, \$14. Pp. 1,160, with 581 illustrations. Philadelphia & London: W. B. Saunders Company, 1930.

Twelve years has elapsed since the previous edition of this great book was published. A multitude of contributions on neoplastic diseases has appeared from all points of the scientific circle—physics, chemistry, physiology, pathology, clinical medicine and genetics—in the interim, necessitating extensive revision of many sections and the rewriting of some of the forty-nine chapters of the book. Dr. Ewing is most ably fitted to present a critical review of this expanding knowledge and to collect from the innumerable sources the essential facts and principles. He has omitted much historical material from this edition to make room for new contributions and yet has kept the volume within reasonable space. The general plan of the book remains the same. The author combats the theory that tumors fall into a limited number of grand classes in which the forms occurring

in the several organs are so nearly related as to be virtually identical. The practicing physician has been content to regard all cases of general classes of tumors as equivalent conditions without regard to the organ involved and to treat the members of each class alike. On this theory was born the conception of a universal causative agent of malignant tumors, a point of view that has greatly retarded progress. To combat this conception, Dr. Ewing analyzes the many factors which meet in the inception of tumors. He emphasizes the dependence of the clinical course on histologic structure, traces the histogenesis and contrasts the striking clinical features which often are characteristic of different tumors. The first nine chapters are of a general nature, dealing with theories, the chemistry of tumors, pathology, malignancy, metastases, experimental cancer research and the history, definition and classification of tumors. In the other forty chapters, which the author terms collectively "special oncology," he takes up different kinds of tumors, beginning with fibromas, which are discussed with regard to sites, origin, clinical types and histologic groups. Other chapters are on tumors of the breast, carcinoma of the stomach, maxillary tumors of dental origin, tumors of the kidney, tumors of the testes, myeloma, tumors of the hypophysis, teratology, tumors of nerve trunks, brain tumors, lymphoma, endothelial sarcoma and tumors of the pancreas. The illustrations have been made almost entirely from photographs. The extensive bibliography is arranged in the back of the book under the same general headings as are the chapters.

Vitamin D: Chemistry, Physiology, Pharmacology, Pathology, Experimental and Clinical Investigations. By C. I. Reed, A.M., Ph.D., Associate Professor in Physiology, H. C. Struck, M.S., Ph.D., Associate in Physiology, and I. E. Steck, M.S., M.D., Instructor in Physiology and in Medicine, Department of Physiology and Department of Medicine, College of Medicine, University of Illinois, Chicago. Cloth. Price, \$4.50. Pp. 389, with 13 illustrations. Chicago: University of Chicago Press, 1939.

The authors of this book are among the chief proponents of the use of massive doses of vitamin D in the treatment of arthritis, "pollinosis" and a variety of clinical conditions other than rickets. Therefore it is not surprising to find that this is not the conventional review of vitamin D which its title suggests but, on the contrary, is essentially a defense of the empirical use of vitamin D as a pharmacologic agent. The earlier chapters of the book are devoted to a brief review of the chemistry of vitamin D, the relative potency of various forms of the vitamin (including the several forms of vitamin D milk), a description of biologic and chemical methods for determining vitamin D, and a discussion of the physiologic effects of the vitamin, including its possible mode of action in the prevention or healing of rickets. Throughout the review much space is given to reports of the work of foreign investigators, although these reports are not always critically evaluated and although the results may not have been adequately confirmed. The review of the literature is not as well balanced as could be desired, and although in places the review reads smoothly, all too frequently the reader is confused by the lack of adequate classification and by the quotation of conflicting data with no advance warning that they will be conflicting. Too often also articles are reviewed which the authors state have been available only in abstract. It is difficult to understand why the description of methods for the determination of vitamin D is restricted almost entirely to those used abroad, while no mention is made of the technique adopted by the U. S. Pharmacopeia and the Association of Official Agricultural Chemists, which is standard in the United States for the assay of vitamin D in food and pharmaceutical materials. It is perhaps not so difficult to understand the large amount of space devoted to the discussion of "Vitamin D-Stoss," a method developed and used almost exclusively in Germany for the treatment of rickets with single massive doses (from 200,000 to 600,000 international units) of a crystalline preparation of vitamin D. An example of the type of controversial material frequently included in this book is the discussion of the alleged aphrodisiac effects of vitamin D. This discussion, unfortunately, confuses libido with ovarian function and apparently is not based on adequate knowledge of sexual physiology.

The chief value of the book lies in the detailed reports of the authors' own studies of the toxicity of vitamin D and of their own observations of the effects of massive doses of vitamin D on blood chemistry and on calcium and phosphorus balance.

Observations on a total of 166 subjects are reported, the results of which may be summarized by the statement that the authors claim to have found that, in the recommended dosage of from 200,000 to 300,000 international units a day, immediate "toxication" is relatively rare and readily detected in its early stages. In the studies of calcium and phosphorus metabolism the intake of these minerals was uncontrolled and in the large majority of instances considerably below the standard minimum daily requirement. Also the possible presence or absence of calcium stores was not taken into account in the interpretation of the results. However, the results reported indicate that, in the words of the authors, "there is no conventional picture of mineral metabolism in arthritis and . . . no characteristic response to vitamin D that can be considered in this relation." The authors state further "It is clear . . . that vitamin D does not completely restore the subject to a normal state, probably because it does not generally correct the fundamental disturbance that made the subject susceptible in the first place. Therefore, when the subject reaches the state when no further clinical improvement is apparent, it is useless to continue this treatment. Other measures must then be employed." Nevertheless they insist that vitamin D is of value in relieving the symptoms of arthritis at least temporarily. The objection that the clinical investigations were not adequately controlled and that the relief of symptoms might be due to a remission of the disease has not been satisfactorily met. The book contains a forty-eight page bibliography which is said to contain more than 900 references. It is well printed and contains numerous tables and graphs. This book should be of interest to the physiologist or the physician who may profitably explore the more speculative and controversial phases of our knowledge of vitamin D, but it is not to be recommended as either an authoritative or well balanced review of established knowledge concerning the chemistry or physiology of this vitamin.

It is perhaps not out of place in a review of this sort to point out also that the commercial preparation Ertron, a high vitamin D potency preparation marketed by the Nutrition Research Laboratories, is exploited as a treatment for arthritis in advertising which leans heavily on the work of Dr. Reed and his associates. This preparation has been declared not acceptable by the Council on Pharmacy and Chemistry. Significantly in the prefatory material of the book there occurs acknowledgment of the receipt of financial aid from the Nutrition Research Laboratories. The index shows nine references to the product Ertron.

Actuarial Technique and Financial Organisation of Social Insurance: Compulsory Pension Insurance. By Lucien Féraud. International Labour Office. Studies and Reports Series M (Social Insurance) No. 17. Paper. Price, \$4; 15s. Pp. 568. Washington, D. C. & Geneva: International Labour Office (League of Nations); London: P. S. King & Son, Ltd., 1940.

Only three of the risks that can be covered by social insurance are considered in this volume—those of invalidity, old age and death. The treatment consists of a general introductory discussion followed by monographs on Belgium, Czechoslovakia, France, Great Britain and Italy.

While compulsory sickness insurance is not directly discussed, much of the actuarial and descriptive matter, both of which are very exhaustive, cannot help but be of value to any one concerned with the organization of almost any type of social insurance. The difficulties which hamper actuarial calculations in these fields are pointed out. Because "there have been incessant modifications" in all such systems, and such modifications have been made by legislation or regulation without much regard for actuarial conditions, it is very difficult to lay down rules by which accurate calculations can be made. In the first place there is nearly always a complete lack of statistics "concerning the group that it is proposed to insure . . . the insured group is large, scattered, and constantly liable to variation." Furthermore, "there is no social insurance scheme in existence which has operated without modification long enough to include only persons . . . who have been subject to the same legislation since they were at the lowest age limit for entering insurance." The actuary "must take into account a host of financial, economic, social and even political considerations." It is recognized that insurance itself often produces important effects such as increasing the amount of invalidity.

In addition to many valuable statistical tables concerning the operation of various systems of insurance there are complicated mathematical formulas which are applied in the effort to establish norms for the diverse elements involved in the financial calculations required.

An Atlas of the Commoner Skin Diseases with 120 Plates Reproduced by Direct Colour Photography from the Living Subject. By Henry C. G. Semon, M.A., D.M., F.R.C.P., Physician for Diseases of the Skin, Royal Northern and Hampstead General Hospitals, London. Photography under the direction of Arnold Moritz, B.A., M.D., B.C. Second edition. Cloth. Price, \$12. Pp. 272. Baltimore: William Wood & Company, 1940.

This dermatologic reference book presents in one compact volume, at a reasonable price, 120 Finlay color plates to illustrate the dermatoses most frequently seen in routine practice. Opposite each plate is a short clinical description of the disorder presented, with a practical outline of treatment and an occasional helpful table of differential diagnosis. The various diseases are arranged in convenient alphabetical order. The photography, by Arnold Moritz, is excellent. The illustrations are taken not from moulages but directly from living subjects and they are accurately reproduced to maintain lifelike color values. The cases have been selected intelligently to bring out the cardinal clinical features of each disease, and in the portrayal in color there is a depth or third dimensional effect which is lacking when the illustrations are in the usual black and white. The volume is not intended to be a textbook but rather an accessory aid to the student and practitioner in the detailed study of diseases of the skin. To this end it succeeds admirably and the author, artist and publishers are to be congratulated on the contribution they have made.

Biokhimiya adrenalina. [By] A. M. Uterskiy. [Biochemistry of Adrenalin]. Cloth. Price, 8 rubles. Pp. 302. Kiev: Izdanie Ukrain'skogo Instituta Eksperimental'noy Meditsiny, 1939.

Problems pertaining to the biochemistry of epinephrine did not receive the exhaustive treatment in literature accorded the physiology and the pharmacology of epinephrine. The author points out that, as a hormone and a substance genetically and functionally related to the mediators of the sympathetic nervous system, epinephrine presents a most important and fascinating subject for biochemical investigation. In attempting to present a systematic treatment of the fundamental problems of the biochemistry of epinephrine the author utilizes the accepted theories and hypotheses as well as his own ideas based on the investigations carried out in his laboratory. The volume contains eight chapters dealing with the chemistry, the role of secretion, the various forms in which epinephrine exists in the living organism, epinephrine as a mediator of sympathetic nervous impulses, the chemical nature of sympathenes, the formation of epinephrine, the oxidation products of epinephrine and the role of epinephrine in metabolism and in the dynamics of the hepatic and the muscle cell. The volume is a timely contribution to an important subject. Unfortunately, it does not contain a summary in any of the accessible languages.

A Text-Book of Psychiatry for Students and Practitioners. By D. K. Henderson, M.D., F.R.F.P.S., F.R.C.P.E., Physician-Superintendent of the Royal Edinburgh Hospital for Mental Disorders, Edinburgh, and R. D. Gillespie, M.D., F.R.C.P., D.P.M., Physician for Psychological Medicine, Guy's Hospital, London. Fifth edition. Cloth. Price, \$6. Pp. 660. New York & London: Oxford University Press, 1940.

Five editions of this textbook indicate the established place which it has made for itself in the field that it concerns. The new edition gives a detailed outline of the insulin and metrazol shock technics. Indeed, the authors point out that these methods in individual instances have accomplished brilliant results, have infused psychiatric treatment with new enthusiasm and have added directly and indirectly to research along clinical, chemical and biochemical lines. Psychiatrists are still concerned with new methods for classification of mental disturbances. New additions have been made to the discussions of heredity and to the play technic for the treatment of nervous children. Also some attention has been added to the considerations of the new trend in the field of psychosomatic medicine. The chapter on epilepsy calls attention to recent investigations with the encephalogram. It is the belief of the authors that the sheet anchor of treatment is bromide, with a useful accessory in phenobarbital. They believe that dilantin sodium is a valuable alternate for phenobarbital.

Trudy Instituta im. Gannushkina. Vypusk tretiy. Pod redaktsiyey T. A. Geyera i S. G. Zhislina et al. Vypusk chetverty: Psikhiatricheskaya bolnitsa. Pod obshcheyey redaktsiyey M. Z. Kaplinskogo i S. V. Kraytsa, et al. [Works of Gannushkin Institute for Neuro-Psychiatric Research. Part 3. Part 4: Psychiatric Hospital.] Cloth. Price, 12 rubles, 50 kopeks; 13 rubles. Pp. 312; 326, with illustrations. Moscow, 1939.

Volume III contains papers reporting the work of the institute for the past two years devoted to the subjects of the symptomatology and therapy of schizophrenia. Particularly interesting is the paper by A. C. Kronfeld, in which the author reviews the extensive historical material regarding the concepts of schizophrenia leading up to its formulation by Kraepelin. The convulsive-irritative methods of therapy are described and at the same time emphasis is laid on the need of physical therapeutic measures such as hydrotherapy and electrotherapy.

Volume IV is devoted principally to the problems of organization of a psychiatric hospital and to the problems of the patient after his discharge from the hospital. No particularly new or interesting views are disclosed. The need for accuracy in statistical studies of therapeutic results is emphasized.

A Synopsis of Surgery. By Ernest W. Hey Groves, M.S., M.D., B.Sc., Consulting Surgeon to the Bristol General and Municipal Hospitals, Bristol. Eleventh edition. Cloth. Price, \$5. Pp. 714, with 208 illustrations. Baltimore: William Wood & Company, 1940.

From a purely pedagogic point of view a synopsis may be objectionable if the student relies on it as his sole source of information. While it makes it easier for him to memorize facts for the next examination, it is just as easily forgotten soon after, for the mental process involved in reading a more or less complete text is eliminated. The author with his wide experience as teacher did not from the beginning intend the work to be anything else than a supplement to the major textbooks. As such, this volume may well prove to be of aid to the student in rapidly surveying the entire field. Regarded in this light the volume is easily the best in its class and may be unreservedly recommended to the senior medical student and to the so-called busy practitioner. The popularity of the work is attested by the many editions through which it has passed since its first appearance in 1908.

Voprosy neurorentgenologii. Pod redaktsiyey B. N. Mankovskogo, Ya. I. Geynsmanna. Questions neuro-radiologiques. Cloth. Price, 15 rubles. Pp. 266, with illustrations. Kiev: Gosudarstvennoe Meditsinskoe Izdatel'stvo USSR, 1939.

The volume contains some of the more important papers presented at the session of neurorentgenologists of the Kiev Psychoneurologic Institute in 1936. The papers deal with roentgenologic study of the various anatomic questions pertaining to the skull and the spinal dural sac, the various roentgenologic methods such as craniography, myelography and encephalography, and the value of roentgenology in diagnosis and localization of brain tumors. The character of the work as reflected in these papers appears to be abreast of the present day advances in the field. Each paper has a brief summary in French.

A Check List for the Survey of Health and Physical Education Programs in Secondary Schools. By Terry H. Dearborn, School of Hygiene and Physical Education, Stanford University. Paper. Price, 60 cents. Pp. 23, Stanford University, California: Stanford University Press, 1940.

This pamphlet is one of the many appraisal devices which are being used more and more extensively in public health, social service and educational fields. This outline includes eight major divisions, of which the first is a description of the school and community, the second deals with organization and administration of the school health program, the third with hygiene of the school program, the fourth with health supervision, the fifth with hygiene of environment, the sixth with hygiene instruction, the seventh with physical education for boys and the eighth with physical education for girls. Altogether it makes a lengthy questionnaire which would require a considerable study to execute satisfactorily. As with all appraisal instruments, its value is in direct proportion to the percentage of factual information as distinguished from opinions which it contains. Objectivity of self appraisal is difficult of achievement. This questionnaire seems for the most part to be about as objective as could be expected of a questionnaire on a subject involving so many variables and personal equations. In the last analysis, of course, the effectiveness of a program of health and physical education

is not measured by equipment and curriculum but by such intangibles as qualifications of personnel, personality of instructors and resulting instructor-student relationships. Although the instructions state that this check list is not designed to be used as a questionnaire, it nevertheless has all the characteristics of such an instrument and will unquestionably be used as such in many instances.

School Health Problems. By Laurence B. Chenoweth, A.B., M.D., Professor of Hygiene, University of Cincinnati, and Theodore K. Selkirk, A.B., M.D., Instructor in Pediatrics, College of Medicine, University of Cincinnati, Cincinnati, Ohio. With a Chapter on School Health Administration. By Richard Arthur Bolt, M.D., Dr.P.H., Director, Cleveland Child Health Association, Cleveland. Second edition. Cloth. Price, \$3. Pp. 419, with 115 illustrations. New York: F. S. Crofts & Co., 1940.

This book, in its fourth printing, deserves its wide circulation. It is a concise, adequate and comprehensive discussion of school health problems, dealing with history, the laws and factors involving growth in children, physical examination of children and its educational aspects, control of communicable diseases, light and vision, acoustics and hearing, special classes, tuberculosis in school children, mental hygiene, physical education, safety and accident problems, principles and school administration, sanitation and the teaching of health. The book gives scientific fundamentals on which various procedures are based and discusses with eminent objectivity and a due regard for all points of view the various problems which involve controversial or doubtful procedures. One need not necessarily agree with all the opinions of the authors to recognize that this book is based on a broad understanding of the subject, both from experience and from a wide familiarity with the literature. The book is so extensively documented that it would be valuable for its bibliography alone, if for nothing else. It should be of utmost value to school administrator, school nurse, classroom teacher, health supervisor, physical education personnel, school physicians, practicing physicians and members of school boards.

The Calcified Pineal Gland. By Dr. W. Bergmann. Paper. Pp. 89, with 15 illustrations. Assen: Van Gorcum & Comp. N. V., 1940.

This superficial, uncritical monograph is not worth critical consideration.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Liability for Excessive Reaction of Patient to Mercury Oxycyanide.—The plaintiff, who was afflicted with an incipient cataract of her right eye, and a friend, Mrs. Carver, who apparently had a similar affliction, on Sept. 9, 1937, went to the clinic operated by Drs. McLaughlin and Nauth. Dr. Walter, an eye specialist employed by the clinic, injected under the conjunctiva of the plaintiff's right eye 5 drops of a solution which had been prepared by the clinic's pharmacist, composed of 1 part of mercury oxycyanide in 10,000 parts of distilled water. He also injected some of the same solution into Mrs. Carver's eyes. The purpose of the injection was to set up an irritation to stimulate circulation in the eye and thereby arrest the cataract. An excessive reaction to the drug occurred in the plaintiff's right eye and a chronic inflammation of that eye resulted. Dr. Walter treated her for this condition until she went elsewhere for treatment. The plaintiff later sued all three physicians for malpractice and recovered a verdict in her favor. From the judgment of the trial court denying their motion for a judgment notwithstanding the verdict or for a new trial, the defendants appealed to the Supreme Court of Minnesota.

At the trial defendant Walker admitted that the reaction in the plaintiff's right eye was greater than anticipated or usual. He testified that he had made twenty injections into the eyes of different patients, using the same solution as he had injected into the plaintiff's eye, without any untoward results except as to the plaintiff, Mrs. Carver and a Mrs. Hays. However, the

excessive reactions in the plaintiff's and Mrs. Carver's eyes were not observed by him until seven days after the injections were made on September 9, and it was not shown whether he observed the excessive reaction in Mrs. Hays' eyes before or after that date. He further testified, and in this he was corroborated by medical experts called by both the plaintiff and the defendants, that injection of a 1:10,000 solution of mercury oxycyanide in the treatment of incipient cataract is good standard practice among eye specialists. The medical testimony also showed that injection of such a solution in a dosage up to 15 or 20 drops is considered safe. Three medical witnesses for the defendants, eye specialists, testified that the unexpected excessive reaction in the plaintiff's eye resulted either from some focal infection in her body or from her supersensitivity to the drug.

The fact that injection of the drug caused an excessive reaction or a bad result, said the Supreme Court, was not proof that either defendant Walker or the clinic's pharmacist was negligent. Common experience teaches that whether a drug is taken internally or is injected into the tissues or the blood stream the reaction is not the same in all persons even of the same age or apparently with the same condition, and the reaction varies greatly at times even as to the same person, depending on his physical or mental condition. Here the evidence was undisputed that "a dose of more than three times that used would be safe." There was no suggestion that defendant Walker's treatment after he discovered the excessive irritation was improper. Although the irritation or inflammation of the plaintiff's right eye did originate or start from the injection made by Dr. Walker, that fact did not prove or tend to prove negligence on his part. On the contrary, all the medical witnesses agreed that starting an irritation in the eye to stimulate circulation is the standard practice in the treatment of incipient cataract. What caused the inflammation to persist was unknown even to the medical experts. The plaintiff's only medical witness ventured no opinion that attributed the prolonged persistence of the irritation to any fault, lack of skill, or negligence on the part of any of the defendants. In the judgment of the court, the record in the case was barren of proof that the protracted irritation or inflammation of the plaintiff's right eye was due to the negligence of any of the defendants. The court concluded that the verdict in favor of the plaintiff was not sustained by the evidence because it was based on mere conjecture or guess. As the court did not believe this a proper case in which to order judgment notwithstanding the verdict, it reversed the judgment of the trial court with direction that a new trial be granted.—*Cassidy v. McLaughlin et al. (Minn.)*, 285 N. W. 889.

Medical Practice Acts: Validity of Revocation Proceedings When Accused Physician Is Incarcerated Out of the State.—In the two decisions reported here the Supreme Court of Florida, in effect, ordered the state board of medical examiners of Florida to rescind and revoke orders previously entered by it at separate times revoking the licenses of two physicians, Weathers and Munch, to practice medicine. At the time of the revocation proceedings both physicians were incarcerated in the federal penitentiary at Atlanta, Ga., after conviction of felonies—Weathers, for a violation of the Harrison Narcotic Act and Munch for illegal use of the United States mails to defraud in selling bogus diplomas and licenses to practice medicine. Prior to holding the revocation proceedings in question notice of the hearings and copies of the charges preferred against each physician were duly served on each of them by registered mail. However, since the appropriate section of the Florida medical practice act in force at the time of each revocation proceeding conferred on the accused physician the right at the hearing to cross examine the witnesses against him, to produce witnesses in his defense and to appear personally or by counsel, the Supreme Court was of the opinion that the orders entered by the board were void as a denial of due process of law. The medical practice act, said the court, contemplates that a hearing on a revocation matter shall be held in the presence of the accused physician. While an accused physician may voluntarily waive that right he cannot be held to have

waived it by his failure to appear when he is powerless to attend because of incarceration in prison, when that fact is known to the board, and when he does no affirmative act constituting a waiver. While the Supreme Court, in effect, restored to the two physicians their licenses to practice in Florida, it stated that nothing in its decisions nor in the prior revocation proceedings would preclude the board in the future from instituting "in a constitutional manner" proceedings looking toward the revocation of Weathers' and Munch's licenses for the commission of the very acts which formed the basis of their conviction in the federal court and for which they served time in the federal penitentiary.—*State ex rel. Weathers v. Davis et al. (Fla.)*, 196 So. 487; *State ex rel. Munch v. Davis et al. (Fla.)*, 196 So. 491.

Medical Services Necessities of Life.—In the opinion of the appellate department, superior court, Los Angeles County, Calif., medical services are necessities of life within the meaning of a California statute (Code of Civil Procedure, section 690.11), which provides that when a judgment is based on a necessary of life the judgment creditor may execute on up to one half of all wages earned by the judgment debtor.—*Medical Finance Ass'n v. Short (Calif.)*, 92 P. (2d) 961.

Society Proceedings

COMING MEETINGS

- American Academy of Ophthalmology and Oto-Laryngology, Cleveland, Oct. 6-11. Dr. William P. Wherry, 107 South 17th St., Omaha, Secretary.
- American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Excelsior Springs, Mo., Sept. 26-28. Dr. James R. Bloss, 418 Eleventh St., Huntington, W. Va., Secretary.
- American Association of Railway Surgeons, Chicago, Sept. 16-18. Dr. Daniel B. Moss, 547 West Jackson Blvd., Chicago, Secretary.
- American Clinical and Climatological Association, White Sulphur Springs, W. Va., Oct. 28-30. Dr. Francis M. Rackemann, 263 Beacon St., Boston, Secretary.
- American College of Surgeons, Chicago, Oct. 21-25. Dr. Frederic A. Besley, 40 East Erie St., Chicago, Secretary.
- American Hospital Association, Boston, Sept. 16-20. Dr. Bert W. Caldwell, 18 East Division St., Chicago, Executive Secretary.
- American Public Health Association, Detroit, Oct. 8-11. Dr. Reginald M. Atwater, 50 West 50th St., New York, Executive Secretary.
- American Roentgen Ray Society, Boston, Oct. 1-4. Dr. Carleton B. Peirce, Royal Victoria Hospital, Montreal, Canada, Secretary.
- American Society of Anesthetists, New York, Oct. 10. Dr. Paul M. Wood, 745 Fifth Avenue, New York, Secretary.
- Association of Military Surgeons of the United States, Cleveland, Oct. 10-12. Dr. H. L. Gilchrist, Army Medical Museum, Washington, D. C., Secretary.
- Central Society for Clinical Research, Chicago, Nov. 1-2. Dr. Carl V. Moore, Washington University School of Medicine, St. Louis, Secretary.
- Clinical Orthopaedic Society, Milwaukee and Madison, Wis., Oct. 18-19. Dr. Myron O. Henry, 825 Nicollet Ave., Minneapolis, Secretary.
- Colorado State Medical Society, Glenwood Springs, Sept. 11-14. Mr. Harvey T. Sethman, 537 Republic Bldg., Denver, Executive Secretary.
- Delaware Medical Society of Rehoboth Beach, Sept. 9-11. Dr. C. L. Munson, 1015 Washington St., Wilmington, Secretary.
- District of Columbia, Medical Society of the, Washington, Oct. 15-17. Mr. Theodore Wiprud, 1718 M St., N.W., Washington, Secretary.
- Idaho State Medical Association, Sun Valley, Sept. 11-14. Dr. J. N. Davis, 204 Fourth Ave., East, Twin Falls, Secretary.
- Indiana State Medical Association, French Lick, Oct. 29-31. Mr. Thomas A. Hendricks, 23 East Ohio St., Indianapolis, Executive Secretary.
- Inter-State Postgraduate Medical Association of North America, Cleveland, Oct. 14-18. Dr. W. B. Peck, 27 East Stephenson St., Freepoint, Ill., Managing Director.
- Kentucky State Medical Association, Lexington, Sept. 16-19. Dr. A. T. McCormack, 620 South Third St., Louisville, Secretary.
- Michigan State Medical Society, Detroit, Sept. 24-27. Dr. L. Fernald Foster, 2020 Olds Tower, Lansing, Secretary.
- Mississippi Valley Medical Society, Rock Island, Ill., Sept. 25-27. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.
- Nevada State Medical Association, Las Vegas, Oct. 11-12. Dr. Horace J. Brown, 120 North Virginia St., Reno, Secretary.
- Omaha Mid-West Clinical Society, Omaha, Oct. 28-Nov. 1. Dr. J. D. McCarthy, 107 South 17th St., Omaha, Secretary.
- Pacific Association of Railway Surgeons, Reno, Nev., Sept. 20-21. Dr. W. T. Cummins, 1400 Fell St., San Francisco, Secretary.
- Pennsylvania, Medical Society of the State of, Philadelphia, Sept. 30. Oct. 3. Dr. Walter F. Donaldson, 500 Penn Ave., Pittsburgh, Secretary.
- Southern Minnesota Medical Association, Red Wing, Sept. 23. Dr. Harold C. Iabain, 102 Second Ave., Rochester, Secretary.
- Vermont Medical Society, Rutland, Oct. 9-10. Dr. B. F. Cook, 154 Bellevue Ave., Rutland, Secretary.
- Wisconsin, State Medical Society of, Milwaukee, Sept. 18-20. Mr. J. G. Crownhart, 110 East Main St., Madison, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1930 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama State Medical Assn. Journal, Montgomery

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- Vitamin Deficiencies in Practice. J. B. Youmans, Nashville, Tenn.—p. 1.
History of Ether Anesthesia: Its True Discoverer. S. A. Gordon, Marion.—p. 7.
The Government's Aid-to-the-Blind Program. B. F. Jackson, Montgomery.—p. 9.
Present Status of Fracture of Hip. W. C. Hannon, Mobile.—p. 10.
Vomiting in Early Infancy. H. Kennedy Jr., Birmingham.—p. 13.

American Journal of Clinical Pathology, Baltimore

10:425-509 (July) 1940

- Clinical Pathologist. L. W. Larson, Bismarck, N. D.—p. 425.
*Incidence of Trichinosis Among County Hospital Patients in Detroit Area: Based on 500 Consecutive Autopsies. S. E. Gould, Eloise, Mich.—p. 431.
Unusual Spirochete Recovered from Blood in Arthritis. Thelma Wenzel, Nashville, Tenn.—p. 460.
Rheumatic Heart Disease: Analysis of 110 Cases. A. Levitt and S. J. Jaskiewicz, Buffalo.—p. 467.
*Sputum Studies in Pneumonia as Aid in Prognosis. A. W. Frisch, Detroit.—p. 472.
Tuberculous Sclerosis with Cerebellar Involvement. A. F. Liber, New York.—p. 483.
Clinical Blood Cultures: Analysis of Over 5,000 Cases. H. Fox and J. S. Forrester, Philadelphia.—p. 493.

Incidence of Trichinosis in Detroit Area.—Gould investigated the incidence of trichinosis in 500 unselected consecutive necropsies of county hospital patients in the Detroit area and discovered ninety-three positive cases of infestation of *Trichinella spiralis*. The first ninety cases were examined by the digestion method only and eleven positive cases (12.2 per cent) were found. In the remaining 410 cases the pectoral muscle and diaphragm were examined by the microscopic press method and the Baermann digestion technic and eighty-two positive cases were found, an incidence of 20 per cent. If the diaphragm alone was available for examination, the highest percentage of positive observations would be obtained by a combined microscopic press examination of a specimen from the tendinous portion along with the examination of a liberal specimen by the digestion technic. An increasing frequency of infestation was found in successive decades from the fourth to the eighth inclusive. High incidences were found for the groups born in Austria, Hungary, Rumania or Bohemia. These were grouped together because it was believed that their food habits, particularly with reference to the preparation of pork products, were similar. In the group of foreign born patients it appeared likely that many had developed their infestation prior to their entrance into the United States. With advancing age there was an increase in the number of cases with calcified cysts. In cases positive on microscopic examination the diaphragms showed an average infestation 2.2 times as great as that of the pectoral muscle specimens. With the digestion technic only 22 per cent of the larvae estimated present in the diaphragm specimens and approximately 63 per cent of the larvae estimated present in the pectoral muscle specimens were recovered in the sediment. In six cases in which all of the digesting fluid was examined fractionally the total number of larvae recovered in each case approximated the number estimated to be present on the basis of the microscopic examination. In thirty-five cases in which *Trichinella* was recovered in the pectoral muscle or diaphragm the heart muscle was examined by the microscopic press and the digestion methods and in none of these cases was a single cyst or larva found. In none of the ninety-three patients with

trichinosis was the disease recognized clinically. Three of the patients gave a history of "rheumatic" symptoms and at necropsy showed no lesion other than trichinosis. A fourth patient with a moderately severe infestation had a clinical diagnosis of alcoholic polyneuritis. It is likely that in the near future an increasing number of clinical and subclinical cases of trichinosis will be recognized during life.

Sputum Studies in Pneumonia as Aid in Prognosis.

In a preliminary report of seventy-eight roentgenographically proved cases of pneumonia a correlation was noted between multiple lobe involvement, decreased circulating leukocytes, incidence of blood stream invasion, mortality and the number of extracellular encapsulated pneumococci in rusty or bloody sputum. The present communication, based on 228 cases, is a continuation of the study. Frisch states that the microscopic examination of rusty sputum is a relatively quick and simple method of differentiating the severe from the mild pneumococcal pneumonias. There is a significant correlation between the number of pneumococci per field in the sputum and the incidence of bacteremia, leukopenia, multiple lobe involvement and the mortality rate. In a group of 181 patients, prognoses based on sputum counts have proved accurate enough to be applicable in individual cases. In addition, preliminary observations on necropsy material tend to support the concept that the number of pneumococci in rusty sputum is a reflection of the number present in some pneumonic areas of the lung. On the basis of these observations it may be possible to classify many cases of pneumonia on admission to the hospital into those requiring vigorous therapy and those which will respond to minimal treatment. Unfortunately some patients do not produce rusty sputum and are not suitable for study. The atypical behavior of type III pneumonia has been observed by numerous investigators. Type III pneumococci have the largest capsule and accordingly produce the greatest amount of specific soluble carbohydrate. The pneumonia induced by this organism is characterized by a predilection for the aged, a prolonged clinical course and a relatively low bacteremic incidence. The response to serum is often unsatisfactory and the mortality rate in bacteremic cases is unusually high. In sputum the type III pneumococcus differs from all others thus far observed in that the number of pneumococci per field does not appear to be closely related to the outcome of the pneumonia.

American Journal of Medical Sciences, Philadelphia

200:1-144 (July) 1940

- Disappearance of Intravenously Injected Lymphocytes in Absence of Gastrointestinal Tract. L. A. Erf, Berkeley, Calif.—p. 1.
Antianemic Principle in Human Liver in Carcinomas of Stomach and Cecum. J. R. Schenken, J. Stasney and W. K. Hall, New Orleans.—p. 11.
*Follicular Lymphoblastoma (Giant Lymph Follicle Hyperplasia of Lymph Nodes and Spleen). A. H. Baggenstoss and F. J. Heck, Rochester, Minn.—p. 17.
Thrombosis of Axillary and Subclavian Veins, with Note on Post-Thrombotic Syndrome. J. R. Veal, Washington, D. C.—p. 27.
Myocardial Degeneration Associated with Uremia in Advanced Hypertensive Disease and Chronic Glomerular Nephritis. B. A. Gouley, Philadelphia.—p. 39.
Relationship of Migraine to Hypertension and to Hypertension Headaches. J. W. Gardner, G. E. Mountain and E. A. Hines Jr., Rochester, Minn.—p. 50.
Diabetic Control versus Caloric Sufficiency in Treatment of Diabetes and Pulmonary Tuberculosis. H. F. Root, Boston.—p. 53.
*Gastroscopic Findings in Patients with Duodenal Ulcer. T. Christiansen, Copenhagen, Denmark.—p. 61.
Inverted Duodenum, Its Clinical Significance with Report of Fourteen Cases. M. Feldman and T. H. Morrison, Baltimore.—p. 69.
Use of Sulfapyridine in Streptococcus Viridans Meningitis. W. J. Mitchell, A. G. Bower and P. M. Hamilton, Alhambra, Calif.—p. 75.
Sabin Agglutination Test as Control of Sulfapyridine Treatment of Pneumonia. W. W. Fox, R. Rosi and W. L. Winters, with technical assistance of Dolores Lammers, Chicago.—p. 78.
Control of Urine Reaction. M. A. Bridges and Marjorie R. Mattice, New York.—p. 84.
Effect of Nicotinic Acid on Peripheral Blood Flow in Man. D. I. Abramson, K. H. Katzenstein and Fanny A. Senior, Cincinnati.—p. 96.
Utilization of Vitamin A Added to Mineral Oil. A. C. Curtis and Priscilla B. Horton, Ann Arbor, Mich.—p. 102.

Follicular Lymphoblastoma.—According to Baggenstoss and Heck, a clinical and pathologic entity variously called "giant follicle hyperplasia of lymph nodes and spleen," "giant follicular lymphadenopathy" and "follicular lymphoblastoma" has been

described in the literature in recent years with increasing frequency. The authors review cases reported in the literature and present a clinical and pathologic study of thirteen cases seen at the Mayo Clinic. Seven of the latter died. In three cases necropsy was performed; in eight the lymph nodes and in two both lymph nodes and spleen were available for microscopic examination. Follicular lymphoblastoma is characterized by an insidious onset with regional or general lymphadenopathy, splenomegaly, absence of anemia or abnormal cells in the blood and by great radiosensitivity of the lesions. The average duration of life after the appearance of the disease is 4.5 years, but two patients have lived as long as seventeen years. The characteristic histologic changes occurring early in the disease consist of an increase in the number and size of the follicles of the lymph nodes and of the malpighian corpuscles of the spleen. There is a tendency toward fusion of the follicles, and the lymphatic sinuses are generally narrowed or obliterated. There is a superficial resemblance between the microscopic appearance of follicular lymphoblastoma and the microscopic appearance of hypertrophy of the secondary centers of lymph nodes resulting from toxic or inflammatory conditions. The histologic criteria which enable the histopathologist to distinguish the two conditions are outlined in a table. In certain rare instances in which the microscopic appearance is not typical of either follicular lymphoblastoma or inflammation it may be wise to reserve diagnosis and to use a descriptive, noncommittal term, such as "follicular hypertrophy." Subsequent observation and biopsy frequently will bear out the suspicion that the condition is an early instance of follicular lymphoblastoma.

Gastroscopic Observations in Duodenal Ulcer.—Christiansen stresses the disagreement between the gastroscopic and the pathologic-anatomic concepts of the pathogenesis of peptic ulcer. Konjetzny maintains that chronic ulcer is the end product of a primary chronic gastroduodenitis which passes through the catarrhal and the erosive stage, reaching its climax in the ulcerative stage with the formation of one or more chronic ulcers. In contrast to this view, Schindler and other gastroscopists consider chronic peptic ulcer and gastritis as two different lesions without causal connection. Gastroscopy in most cases of chronic ulcer does not reveal gastritis. Gastritic alterations which may appear in cases in which the ulcer gives rise to retention of stomach contents are secondary and curable. Ulcerations may appear in primary gastritis but they do not develop into chronic ulcers, since they are acute and transitory phenomena. Christiansen found seventy cases of roentgenologically verified duodenal ulcer among more than 500 patients with organic lesions of the digestive tract. In none of these was it practicable to ascertain by relief examination changes in the stomach. The patients were examined gastroscopically at a time when they had pronounced dyspeptic symptoms and prior to the institution of treatment. Most of them were submitted to gastroscopic examination several times. He found that, regardless of the secretory conditions, gastroscopy demonstrated definite changes in the mucous membrane in forty-nine of the seventy cases (70 per cent) while the gastroscopic aspects were normal in twenty-one (30 per cent). Thus, in contrast to Schindler's opinion, the gastroscopic examination revealed that the stomach in the majority of the cases was the site of pronounced pathologic alterations. The frequency of gastritis in duodenal ulcer cannot, however, be taken to confirm the observations of Konjetzny, as there is a considerable difference between the changes observed and those found in resected specimens. The author reviews a case history which furnishes an explanation of the divergence between Konjetzny and Schindler. If resection had been performed on a patient when his illness was at its worst, the specimen would have presented the picture on which Konjetzny based his theory. There would have been a duodenal ulcer associated with a violent, erosive, antral gastritis. The course of the disease showed, however, that these pronounced changes were of an acute character, healing within a few weeks when the pyloric spasm subsided and the retention disappeared. Improvement of clinical symptoms ran parallel with rapid healing of severe gastric changes, while the roentgenographic changes in the duodenum remained constant. This may be interpreted as indicating that the particular duodenal ulcer is the primary lesion while gastritis is secondary. The author thinks that, as a general rule,

patients with a nonstenotic duodenal ulcer are liable to pathologic changes in the gastric mucosa even though no abnormality may be demonstrated by roentgenography or the Ewald test meal. Gastroscopy is the method of examination capable of settling this question. The gastritis may be total or partial. The erosions are acute manifestations which may heal in a few days, regardless of whether the gastritis improves at the same time. Transition to a chronic gastric ulcer has not been observed. The typical ulcer symptoms seem to appear in cases in which the stomach is affected. Acute gastric retention may be associated with severe erosive changes in the stomach. These changes are inconstant and may disappear rapidly when the retention subsides. Probably this condition does not involve a primary gastritis, as has been claimed by Konjetzny, but more likely secondary peptic injury, as asserted by Schindler.

American Journal of Orthopsychiatry, Menasha, Wis.

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- Hallucinations in Children. Lauretta Bender and H. H. Lipkowitz, New York.—p. 471.
- Psychobiologic Interpretation of Delinquency. J. J. Michaels, Boston.—p. 501.
- Psychotherapeutic Problems of Puberty. F. J. Curran, New York.—p. 510.
- Runaway Children. M. D. Riemer, Brooklyn.—p. 522.
- Personality and Efficiency of Mental Functioning. Harriet Babcock, New York.—p. 527.
- Body-Mind Unity. I. S. Wile, New York.—p. 532.
- Personality Distortion and Early Institutional Care. L. G. Lowrey, Brooklyn.—p. 576.
- Foster Home and Group Placement. Julia Deming, Boston.—p. 586.

American Journal of Physiology, Baltimore

130:1-230 (July) 1940. Partial Index

- Vasoconstriction in Renal Hypertension Abolished by Pithing. W. Dock, with assistance of B. Moy, San Francisco.—p. 1.
- *Variability of Blood Hydrogen Ion Concentration and Its Association with Meteorologic Factors. M. Berg, A. Mayne and W. F. Petersen, Chicago.—p. 9.
- Demonstration of Liberation of Renin into Blood Stream from Kidneys of Animals Made Hypertensive by Cellophane Perinephritis. I. H. Page, Indianapolis.—p. 22.
- The Flow, Pressure and Composition of Cardiac Lymph. C. K. Drinker, Madeleine Field Warren, F. W. Maurer and Jane D. McCarrell, Boston.—p. 43.
- Reactions of Large and Small Arteries in Man to Vasoconstrictor Stimuli. A. B. Hertzman and J. B. Dillon, St. Louis.—p. 56.
- Decussation of Sacral Autonomic Pathways of Bladder from Hypothalamus. S. C. Wang and G. Clark, Chicago.—p. 74.
- Further Study on Gastrointestinal Motility Following Stimulation of Hypothalamus. S. C. Wang, G. Clark, F. L. Dey and S. W. Ranson, Chicago.—p. 81.
- Relationship Between Differential Pressure and Blood Flow in Coronary Artery. H. D. Green and D. E. Gregg, Cleveland.—p. 97.
- Effects of Viscosity, Ischemia, Cardiac Output and Aortic Pressure on Coronary Blood Flow Measured Under a Constant Perfusion Pressure. D. E. Gregg and H. D. Green, Cleveland.—p. 108.
- Changes in Coronary Circulation Following Increased Aortic Pressure, Augmented Cardiac Output, Ischemia and Valve Lesions. H. D. Green and D. E. Gregg, Cleveland.—p. 126.
- Observations on Genesis of Electrical Currents Established by Injury to Heart. H. Sugarman, L. N. Katz, A. Sanders and K. Jochim, Chicago.—p. 130.
- Interaction of Central and Peripheral Chemical Control of Breathing. R. Gesell, J. Lapidus and M. Levin, Ann Arbor, Mich.—p. 155.
- Distinction Between Arterial, Venous and Flow Components in Photoelectric Plethysmography in Man. A. B. Hertzman and J. B. Dillon, St. Louis.—p. 177.
- Some Features of Early Stages of Neuromuscular Transmission. A. Rosenblueth and W. B. Cannon, Boston.—p. 205.
- Some Conditions Affecting Late Stages of Neuromuscular Transmission. W. B. Cannon and A. Rosenblueth, Boston.—p. 219.

Variability of Blood pH and Meteorologic Factors.

Berg and his associates studied the variations in the blood pH during one year in a group of "normal" dogs and compared them with similar determinations made on human beings. They found a high statistical correlation in comparing the continuous pH values in dogs with those of human beings. A relatively wide degree of fluctuation was observed in both. In man the weekly averages varied from 7.28 to 7.68, while in dogs they varied from 7.32 to 7.68. In comparing the blood pH and the weather, statistically significant coefficients were found with barometric pressure and temperature, with a distinctly higher correlation for barometric pressure than for temperature. Increases in pH were associated with increases in barometric pressure. However, the relationship between pH and tempera-

ture was not as marked and only at higher temperatures were increases in p_H definitely associated with increases in temperature. Varying results were found in attempting to evaluate seasonal influences. Failure to duplicate seasonal results is logical, for one spring may not be like another spring and one May not like another May. The temperature may be low and the barometric pressure high, or they may be unstable one year and more stable the next. One cannot compare corresponding months of different years and consider them similar only because of their order in time. On such a basis failures to duplicate results cannot be considered as discounting climatic influence.

American Journal of Public Health, New York 30:725-858 (July) 1940

- Development of Medical Care Plans for Low Income Farm Families: Three Years' Experience. R. C. Williams, Washington, D. C.—p. 725.
- New Developments in Underground Drainage for Malaria Control. T. A. Randle, Tupelo, Miss.—p. 736.
- Training for Public Health: A Review and a Forecast. E. R. Coffey, Washington, D. C.—p. 743.
- Supervision of Public Health Nurses: A Continuous Educational Program: From the Point of View of the Rural Agency. Anna Heisler, San Francisco.—p. 749.
- Federal Cancer Program. L. Hektoen, Washington, D. C.—p. 755.
- The Foundry Dust Hazard and Its Control. M. F. Trice, Raleigh, N. C.—p. 760.
- Some Statistical Needs for Proper Administration of Maternal and Child Health Programs. E. F. Daily, Washington, D. C.—p. 766.
- Evaluating the Health Education: Program of a Health Department. Clair E. Turner, Cambridge, Mass., and Mabel R. Stimpson, Chicago.—p. 771.
- Genetic Constitution in the Rabbit and Antibody Production. C. A. Stuart, K. M. Wheeler and P. B. Sawin, Providence, R. I.—p. 775.
- Prevailing Employment Policies in Health Departments. M. V. Ziegler and George S. Brockett, Washington, D. C.—p. 779.
- Use of Ferrets in Laboratory Work and Research Investigations. N. J. Pyle, Pearl River, N. Y.—p. 787.
- Appraising a School Health Education Program. Ruth E. Grout, Chattanooga, Tenn.—p. 797.
- Administrative Approach to Industrial Hygiene. W. S. Johnson, Jefferson City, Mo.—p. 806.
- To What Degree Are Mortality Statistics Dependable? H. O. Swartout and R. G. Webster, Los Angeles.—p. 811.
- Mortality in Children of Tuberculous Households. Miriam Brailey, Baltimore.—p. 816.

Am. J. Syphilis, Gonorrhea and Ven. Dis., St. Louis 24:401-536 (July) 1940

- Effect of Early Subcutaneous Arsenical and Thermal Treatment on Development of Specific Immunity in Syphilitic Rabbits. I. L. Schamberg, Baltimore.—p. 401.
- Studies in Bismuth Therapy of Syphilis: II. Therapeutic Activity of Bismuth in Syphilis of Rabbits in Relation to Its Urinary Excretion. J. A. Kolmer, H. Brown and Anna M. Rule, Philadelphia.—p. 415.
- Id.: III. Spirocheticidal, Trypanocidal and Mechanism of Activity of Bismuth Compounds in Vitro and in Vivo in Relation to Therapeutic Effectiveness. J. A. Kolmer, Clara C. Kast and Anna M. Rule, Philadelphia.—p. 439.
- *Observations on Thirty-Five Cases of Venereal Lymphogranuloma Treated with Sulfanilamide. R. O. Stein, Philadelphia.—p. 454.
- Protective Value of Bismuth in Syphilis: Experimental Results with Drinking of Sobisminol. P. J. Hanzlik, A. J. Lehman and W. Van Winkle Jr., San Francisco.—p. 468.
- Chaneroid. M. Sullivan, Baltimore.—p. 482.

Sulfanilamide for Venereal Lymphogranuloma.—Stein used sulfanilamide in the treatment of thirty-five cases of the bubonic type of venereal lymphogranuloma. The duration of the disease in thirty-two cases varied from two days to three months, and in one each it was one, two and three years respectively. All the acute cases cleared up clinically with the same relative speed, but in the cases of longer duration in which fibrosis had occurred the course was different. The dosage of sulfanilamide varied from 4 to 5.3 Gm. divided into four daily doses. Most of the patients were not hospitalized but returned to the clinic three times a week. The amount of the drug given was carefully calculated to last until the next clinic visit. Patients were not informed as to the nature of the medication; thus if the patient experienced toxic symptoms but did not return, no great harm could have occurred. Few toxic effects were encountered. About 50 per cent of the patients complained of headache, dizziness or other minor symptoms. In no case was it considered necessary to stop medication. Of the thirty-five patients treated, the results of three are unknown. The remaining patients were cured, with complete subsidence of the local lesions and relief of all constitutional symptoms. In from two

to ten days the patients felt better and had no further pain. In from five days to four and one half weeks all the lesions had healed, excluding the two cases with draining sinuses, which required about three months of treatment. Two patients with elephantiasis improved within two weeks. Of twenty-two patients treated between six and eight months ago twenty could be followed up and nineteen are clinically well today. All constitutional symptoms have disappeared. The twentieth patient took sulfanilamide for only two days. Subsequently the gland enlarged and ruptured. A draining sinus was established, and the patient was confined to bed for about ten days. Finally the lesion healed. It seems necessary to continue therapy for from seven to ten days after the lesions have completely subsided. In the ordinary case this amounts to about four weeks of treatment with 4 Gm. a day, three weeks with 5.3 Gm. a day or two weeks with 6.6 Gm. a day.

Archives of Surgery, Chicago

41:209-568 (Aug.) 1940. Partial Index

- Place of Gastroscope in Diagnosis of Lesions of Stomach and of Duodenum. D. C. Balfour, Rochester, Minn.—p. 221.
- *Some Etiologic and Pathologic Factors in Cancer of Large Bowel. V. C. David, Chicago.—p. 257.
- Barberry: Ancient Remedy; New Germicide. G. F. Dick, Chicago.—p. 287.
- *Intrathecal Administration of Tetanus Antitoxin. W. M. Firor, Baltimore.—p. 299.
- Origin, Evolution and Significance of Giant Cells in Riedel's Struma. E. Goetsch, Brooklyn.—p. 308.
- Sterilization of Air in Operating Room with Bactericidal Radiation: Results from Nov. 1, 1938, to Nov. 1, 1939, with Further Report as to Safety of Patients and Personnel. D. Hart, Durham, N. C.—p. 334.
- Adenomyosarcoma of Kidney (Wilms Tumor): Report of Three Cases. H. L. Kretschmer, Chicago.—p. 370.
- *Gas Gangrene, with Special Reference to Importance of Wool as Source of Contamination. U. Maes, New Orleans.—p. 393.
- Surgical Management of Sacrococcygeal and Vertebral Chordoma. C. G. Mixer and W. J. Mixer, Boston.—p. 408.
- Solitary Nonparasitic Cysts of Liver in Children. A. H. Montgomery, Chicago.—p. 422.
- Changes in Bones and Joints Resulting from Interruption of Circulation: I. General Considerations and Changes Resulting from Injuries. D. B. Phemister, Chicago.—p. 436.
- Buccal Neuralgia: Form of Atypical Facial Neuralgia of Sympathetic Origin. F. L. Reichert, San Francisco.—p. 473.
- Microscopic Changes Induced in Thyroid Gland by Oral Administration of Desiccated Thyroid: Use of Substance in Treatment of Congenital and Simple Colloid Goiter. W. F. Rienhoff Jr., Baltimore.—p. 487.
- Surgical Problems in Treatment of Chronic Ulcerative Colitis. H. B. Stone, Baltimore.—p. 525.
- Ludwig's Angina. H. H. Trout, Roanoke, Va.—p. 532.
- Cardiac Gastric Ulcers: Results of Operation for Apparently Inaccessible Lesions. W. Walters, Rochester, Minn.—p. 542.
- Subdeltoid Bursitis. A. Weeks, San Francisco.—p. 554.
- Operative Treatment of True Hermaphroditism: New Technic for Curving Hypospadias. H. H. Young, Baltimore.—p. 557.

Etiologic and Pathologic Factors in Intestinal Cancer.

—David calls attention to the frequency of supposedly benign polypoid growths of the large intestine and their relation to cancer. His studies comprised 200 resected cancers and 100 specimens of supposedly benign polyps of the colon and rectum. One of the most common alterations in the mucosa of the colon is the occurrence of millet seed-sized flat elevations, which are usually multiple and occur mostly in old persons. The histologic structure of these lesions is one of simple hyperplasia with inflammation or lymphatic hyperplasia of the submucosa. In exceptional instances the lesion may resemble larger polyps, which are almost certainly tumors rather than simple hyperplasia. The next most frequently seen type of polyp is the adenomatous polyp. It varies in size from that of a pea to that of a large cherry and may be transparent or of the same color as the mucosa. It has the indications of being a benign lesion. Other polyps of this adenomatous group present evidence of a growth or tumor change in their epithelium; their color is plum or cherry. They may become large, with a cauliflower surface, and contain branching stalks of connective tissue. In this type of adenoma the mucosa has taken on real growth propensities; it is a benign tumor. Another gross division of benign polypoid tumors is that of papilloma or villous tumors. The tendency to wild, disorganized tissue growth is found in these tumors, and in two of twenty-seven cases the author has seen an early carcinoma beginning in the lesion. One of the most convincing arguments in favor of the relation of polyps of the large bowel

to the development of carcinoma is seen in multiple polyposis, in which the entire colon and rectum may be studded. The etiologic basis here is a hereditary one. They have a tendency to malignant degeneration. Akin to this lesion, but lacking the hereditary factor and the extensive involvement, is the occurrence of multiple polyps. It seems probable that the malignant degeneration of these polyps is responsible for the increasing recognition of multiple cancers of the large intestine. The author observed five double cancers of the large intestine, in four of which the condition was highly suggestive of carcinomatous degeneration of polyps. Of less importance are the so-called lymphoid polyps, which may appear as multiple slightly elevated flat lesions a few millimeters in diameter, affecting the colon and rectum, and really a form of lymphoid hyperplasia. Of more clinical interest but lacking carcinomatous tendencies are the large lymph polyps, of which the author has seen five instances in the rectum. The last classification is the inflammatory type. The elevations and tumor-like growths on the mucosa of a patient with this type of polyp ranged from simple hyperplasia to typical adenoma formation. The author concludes that there is a gross and gradual histologic transition in the mucosa of the large bowel from hyperplasia to adenoma or from papilloma to carcinoma. Whether the tendency to carcinoma is present from the start is not known. Carcinomatous changes can be diagnosed only by gross evidence of induration or ulceration and by microscopic evidence of invasion. While many of the polyps of the colon remain benign for years, they cannot be trusted to do so and should be thoroughly removed, locally if benign, and radically if malignant. The results of biopsy are not conclusive unless the material is taken from an area of ulceration or induration. It is frequently impossible to make a diagnosis of malignancy from a small piece of tissue. It is better to examine the whole tumor. The earliest carcinomas the author has seen in the large intestine were 1 to 2 mm. ulcerating lesions found on polyps.

Intrathecal Administration of Tetanus Antitoxin.—Fior records experiments which show that the intracisternal injection of antitoxin into dogs suffering from early mild or moderately severe tetanus yields far better results than intravenous injection. The experiments in themselves do not warrant the use of intracisternal injections for patients, but when considered with the clinical reports of Yodh or Vener they furnish a strong argument for the employment of this form of treatment. It is highly desirable that a more refined antitetanic serum be produced in order to minimize the severe reactions described by Dietrich. This may be accomplished in one of two ways. First, ordinary antitetanic horse serum may be concentrated and purified by the action of proteolytic enzymes, as has been done with diphtheria antitoxin. Secondly, human serum containing a high titer of tetanus antitoxin may be produced by active immunization of human donors with tetanus toxoid. This possibility was first suggested by Hyland of Los Angeles. The reported experiments comparing the efficacy of intracisternal and lumbar routes are suggestive but not conclusive. Had the animals been kept in a position to cause a gravitational flow of the serum to the medulla, the apparent difference in results with the two sites of injection might have disappeared. Similarly, the author does not consider that his experiment, which was designed to evaluate the importance of the inflammatory reaction to foreign serum in the meninges, is conclusive. Additional studies with purified serum on a larger number of animals are necessary before this question can be settled.

Gas Gangrene: Wool as Source of Contamination.—Maes observed that contamination with woolen clothing is a common source of infection in cases of gas gangrene. At his suggestion Gage had studied samples of clean wool and was able to grow spore-bearing organisms in practically all instances. Given a favorable type of wound (muscle injury) and contamination with wool clothing, the ideal conditions exist for the development of gas bacillus infection. With the assistance of Williams, Maes analyzed the seventy-three cases of gas gangrene observed at the Charity Hospital of New Orleans during the ten year period from 1930 to 1939. He investigated the seasonal incidence because he believed that the wool clothing worn in the cooler months is an important source of contamination. He

found that there was a higher incidence during the cool months. Schenken made cultures of sample of new wool and found gram-positive spore-bearing anaerobic gas-forming bacilli, morphologically compatible with the members of the Clostridium group in eleven out of twelve samples. Dry cleaning and steam pressing did not materially alter the incidence of the organism. Gas bacilli were not found in any of the twelve samples of the material which did not contain wool. This confirms the fact that contamination with clean wool in certain types of wounds should be considered a precursor of gas gangrene. The author observed two instances in which gas bacillus infection followed hypodermic injections. In each of these instances wool blankets had been in contact with the skin or with a raw surface. Thus contamination with any woolen article, even clean clothing, makes rigid prophylactic measures imperative. It is urged that physicians suspect anaerobic infection with production of gas gangrene whenever wounds of the extremities involving muscle have been contaminated with wool or with soil. Such wounds should be treated by wide incision or by thorough débridement. Prophylactic administration of the specific serum seems to be of value, and from the report of Keating and Davis the prophylactic use of roentgen therapy is justified. In the presence of suggestive signs of such infection, specific treatment should be started at once. Since there is some benefit from the anti-gas bacillus serum and from sulfanilamide and since there is positive evidence of benefit from the use of the roentgen rays, all three should be used. Wide incision and amputation still have their place and must be used when conditions warrant.

California and Western Medicine, San Francisco

52:249-312 (June) 1940

Frontiers of Medicine Still Lie Ahead. C. A. Dukes, Oakland.—p. 254.
Endocrinology: A Critical Appraisal. E. H. Rynearson, Rochester, Minn.—p. 257.

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Malaria: Clinical Summary. A. C. Reed, San Francisco.—p. 15.
Child Feeding: A Program Outline. G. B. Mehlin and Sonia E. Allen, San Diego.—p. 18.
Iodide of Potash: Its Interesting History. D. W. Montgomery, San Francisco.—p. 22.
Present Status of Immunization Against Pertussis. J. J. Miller Jr., San Francisco.—p. 25.
Syphilis: Comments on Its History. H. S. Campbell, Los Angeles.—p. 28.

Journal of Pharmacology & Exper. Therap., Baltimore

69:177-271 (July) 1940. Partial Index

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Mode of Action of Veritol. H. Kwiatkowski, London, England.—p. 198.
Anesthesia: I. Anesthetic Action of Cyclopropyl Methyl Ether. J. C. Krantz Jr., C. J. Carr, S. E. Forman and W. E. Evans Jr., Baltimore.—p. 207.
Effect of Sodium Salt of 1,5-Diphenylpyrazoline-3-Carboxylic Acid on Body Temperature of Normal Albino Rats at Different Environmental Temperatures. F. H. Schultz and R. M. Hill, Denver.—p. 221.
Anesthetic Activity of Optical Antipodes: I. Secondary Butyl Alcohols. T. C. Butler and H. L. Dickson, Nashville, Tenn.—p. 225.
Metabolic Fate of 1-Methyl-5-Allyl-5-Isopropyl Barbituric Acid (Narcumal). T. C. Butler and M. T. Bush, Nashville, Tenn.—p. 236.
Free and Bound Morphine in Urine of Morphine Addicts. F. W. Oberst, Lexington, Ky.—p. 240.
Studies on Absorption, Distribution and Elimination of Alcohol: VI. Principles Governing Concentration of Alcohol in Blood and Concentration Causing Respiratory Failure. H. W. Haggard, L. A. Greenberg and N. Rakieten, New Haven, Conn.—p. 252.

Kansas Medical Society Journal, Topeka

41:277-320 (July) 1940

Epilepsy. M. G. Peterman, Milwaukee.—p. 277.
Modern Trends in Anesthesia. L. H. Mousel, Rochester, Minn.—p. 279.
Acute Obstruction of Ureter. O. R. Clark, Topeka.—p. 282.
The Appendix and What to Do with It. C. Wilson, Emporia.—p. 287.
Lobar Pneumonia Complicated by Diabetes Treated with Sulfapyridine: Report of Case. C. B. Johnson, Eudora.—p. 289.
Lymphogranuloma Inguinale: Treatment with Sulfanilamide: Case Report. M. Bernreiter, Kansas City.—p. 290.

New England Journal of Medicine, Boston

223:85-118 (July 18) 1940

- Cysto-Urethrograms: Roentgen Visualization of Urethra, Bladder and Prostate. F. H. Colby and H. I. Suby, Boston.—p. 85.
- *Vitamin A Requirements in Rheumatoid Arthritis. M. G. Hall, Milton, Mass.; T. B. Bayles and Phyllis Soutter, Boston.—p. 92.
- Carcinoma of Ampulla of Vater: Report of Three Year Cure. L. Hyde and E. L. Young, Boston.—p. 96.
- Bacteriology. C. A. Janeway, Boston.—p. 100.

223:119-164 (July 25) 1940

- Physical Growth, Degree of Intelligence and Personality Adjustment of Group of Diabetic Children. Agnes P. McGavin, Ethel Schultz, Gwendolyn W. Peden and B. D. Bowen, Buffalo.—p. 119.
- Irrigation and Tidal Drainage. A. E. MacNeill and J. P. Bowler, Hanover, N. H.—p. 128.
- Kidney Disease. R. Fitz, Boston.—p. 142.

Vitamin A in Rheumatoid Arthritis.—Hall and his associates compared the distribution of vitamin A values among seventy-nine patients with rheumatoid arthritis with those of thirteen normal individuals on a similar dietary regimen. Information was sought as to the daily requirement of vitamin A and the effect, if any, on the course of the disease when this requirement was fulfilled. The average initial biophotometer reading of the seventy-nine patients was 0.78 and that of the controls 0.32 millifoot candle. Twenty-eight patients had initial readings at or below the normal limit of 0.5 millifoot candle, and twenty-eight had initial readings between 0.5 and 1 millifoot candle and were considered borderline or subnormal. The reading of seventeen fell between 1 and 1.5 millifoot candles. This was considered to indicate moderate vitamin A deficiency. The remaining six patients had initial readings greater than 1.5 millifoot candles and were considered severely deficient in vitamin A. The older age groups had more abnormal initial biophotometer readings. However, when the dark adaptation values of arthritic patients between the ages of 20 and 29 are compared with those of controls of the same age, they are seen to be definitely abnormal. The 30 per cent of the patients who were moderately or severely deficient showed no obvious clinical manifestations of vitamin A deficiency, xerophthalmia or keratomalacia. Night blindness was noticed by only one of the patients. During the test, several patients complained of nyctalopia. The provision of adequate vitamin A therapy effected no clinically observable favorable result in the rheumatoid patients, but it would seem desirable to eliminate an existing deficiency of this vitamin as a general supportive measure. In rheumatoid arthritis, as in other chronic or infectious diseases, there is an increased demand for vitamin A as measured by the dark adaptation curve. Many arthritic patients require from four to ten times the amount of vitamin A present in their regular diet to maintain normal dark adaptation curves. At present it is not known whether this increased need represents an increased utilization, decreased absorption or an inactivation of the vitamin.

Public Health Reports, Washington, D. C.

55:1295-1325 (July 19) 1940

- Geographic Distribution of Disease: III. Decade of Poliomyelitis in Louisiana. A. E. Casey and B. J. Aymond.—p. 1295.
- Natural Infection of *Triatoma Heidemannii* with *Trypanosoma Cruzi* in Texas. A. Packchanian.—p. 1300.
- *Isolation and Pathogenicity of *Pityrosporum Ovale*. C. W. Emmons.—p. 1306.
- *Chigger Mites.—p. 1312.

Isolation of Micro-Organism in Dandruff.—According to Emmons, a small yeastlike micro-organism is almost always associated with the dry or greasy scales of seborrhea capitis or dandruff. It can be found on the majority of "normal" scalps and is present on other skin surfaces. This micro-organism is known as the "bottle bacillus" and *Pityrosporum ovale*. Although observers agree that *Pityrosporum ovale* is usually found associated with seborrhea, they do not agree on its cultural characteristics or its etiologic significance. Many investigators have tried in vain to isolate this fungus. In most cases when *Pityrosporum ovale* has been isolated, assuming that the micro-organism obtained was correctly identified, the isolations were largely fortuitous, most attempted cultures yielding no growth or only contaminants. The author reports a method of isolating *Pityrosporum ovale* which is dependable. *Pityrosporum ovale* was repeatedly and easily isolated by planting scales from

seborrhea oleosa in acid dextrose broth containing from 23 to 44 per cent glycerin and incubating at from 30 to 37 C. Subcultures were successfully carried on mediums prepared by pipetting off ether extract of hydrous wool fat, oleic acid or seborrheic scales over agar slants, as described by Benham. Evidence that the organism was actually *Pityrosporum ovale* was furnished by the necessity for using special mediums, the resemblance of the fungus in culture and in the skin, and a series of observations of the inoculum which showed a continuity of development of the cells of *Pityrosporum ovale* in the scales. Attempts were made to determine whether *Pityrosporum ovale* is pathogenic. Instead of trying to find and experimentally infect an individual who did not already carry the fungus, it was decided to inoculate a seborrheic individual and to measure any noticeable increase in the time required to develop seborrhea in the area inoculated as compared with an uninoculated area. Lesions of seborrhea did not appear any sooner in the inoculated areas than in the control areas. These experiments were repeated, but no pathogenic properties of the fungus could be demonstrated. Although some features of seborrhea seem consistent with a parasitic etiology, the failure of these inoculations would give support to the contention of many dermatologists and mycologists that *Pityrosporum ovale* is a saprophyte especially adapted to growth on the skin but without etiologic significance in seborrhea.

Chigger Mites.—Chiggers have a widespread distribution in the United States. They have been found in low lands and well up in the mountains wherever there is a rough growth of weeds and shrubbery. They may be encountered from the latter part of April until the last of October, depending on conditions of temperature and moisture. Chiggers attach themselves to the surface of the skin by means of their mouthparts and feed much as do ticks. They apparently feed on epidermal tissue liquefied by a secretion which they themselves inject into the skin. When they become fully engorged they drop off. The localization of chigger attachment is determined by two factors, the tightness of the clothing at certain parts of the body and the thickness of the skin. Experiments have shown that chiggers attack by preference where the skin is very thin and the flesh wrinkled or tender. Because of their size, 150 microns in width before they have become engorged, chiggers are unable to enter the pores of the skin (which range from 20 to 50 microns in diameter), but they frequently attach themselves at the mouth of hair follicles. Although it is widely believed that chiggers burrow into the skin and embed their entire body, this method of attack must be extremely uncommon. An intense itching develops within the first twenty-four hours after exposure, and this is followed by a breaking out of wheals or papules surrounded by an inflamed area. If the lesions are numerous, fever, headache and temporary nervous upset may result. If there has been exposure to chiggers, an application of kerosene or 95 per cent alcohol will kill the larvae. As soon as possible after exposure, a thick lather of soap should be applied to the affected parts and allowed to remain for ten minutes or more before bathing. Even though the larvae may be removed or killed soon after attachment, usually enough secretion has been introduced to cause the characteristic itching lesion, which may be temporarily relieved by ammonia or strong salt water, or a mild mercurous chloride-phenol lotion. Collodion with metaphen applied to the lesions is recommended both to relieve the itching and to prevent infection. An efficacious measure to prevent attack by chiggers is the liberal sprinkling of the stockings and underclothing with sublimed sulfur. Some authors state that spraying of the shoes, stockings and trouser legs with one of the proprietary fly-repellant preparations is successful in warding off attacks by chiggers.

Tennessee State Medical Assn. Journal, Nashville

33:243-288 (July) 1940

- Analysis of Mortality in Acute Appendicitis and Appendical Peritonitis. J. P. Baird, Dyersburg.—p. 243.
- A New and Original Drainage Tube. E. T. Newell, Chattanooga.—p. 250.
- Planned Economics and the Medical Profession. J. H. Pew.—p. 255.
- Chronic Trigonitis: Its Effect on Trigonal Epithelium. H. L. Douglass, Nashville.—p. 261.
- Treatment of Carcinoma of the Lip. G. S. Johnson, Nashville.—p. 268.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Brain, London

63:123-204 (June) 1940

Gower's Tract and Spinal Border Cells. Sybil Cooper and C. S. Sherrington.—p. 123.

Experimental Study of Role of Neurons in Dissemination of Poliomyelitis Virus in Nervous System. D. Bodian and H. A. Howe.—p. 135.

*Relationship Between Amyotonia Congenita and Congenital Myopathy. J. W. A. Turner.—p. 163.

Tolerance of Blocked Galenic System Against Artificially Increased Intravenous Pressure. B. Schlesinger.—p. 178.

Intracranial Hydatids. C. Langmaid and L. Rogers.—p. 184.

Study of Cortical Metabolism in Relation to Cerebral Disease. K. C. Dixon.—p. 191.

Amyotonia Congenita and Congenital Myopathy.—

Turner believes that the relationship between congenital amyotonia and the myopathies has been somewhat clarified by the study of a family which has been under observation at the National Hospital for a number of years. The family consists of thirteen children, six of whom have been affected by the disease. Neither parent was affected. The clinical picture presented by the children in early infancy was typical of congenital amyotonia as described by Oppenheim, from the observations that fetal movements were feeble and appeared late. From the limpness and small size of the children at birth and during the first few weeks of life, it seems probable that the disease was present before birth. The abnormality of fetal movements has been described previously. In early adult life the clinical picture presented by the same patients was equally typical of a myopathy of somewhat unusual distribution, and the course of the disease shows that there was a gradual transition from the state of amyotonia with its marked flaccidity and absence of local muscular atrophy to the state of myopathy with considerable local muscular atrophy and absence of flaccidity. There can be little doubt that the patients were suffering from one disease process, a myopathy, and from this the author concludes that they were affected by a congenital myopathy, which in its early stages had produced the clinical picture of congenital amyotonia. The clinical picture of congenital amyotonia may be produced by a congenital myopathy or by a spinal disorder which is related to the Werdnig-Hoffmann disease.

British Medical Journal, London

2:1-38 (July 6) 1940

*Reactions from Transfusion of Preserved Blood: Experience with 1,600 Transfusions. E. L. DeGowin and R. C. Hardin.—p. 1.

Prevention of Acute Failure of Circulation Following Injuries to Large Arteries: Experiments with Glass Cannulas Kept Patent by Administration of Heparin. G. Murray and J. M. Janes.—p. 6.

Leprosy Cases in the British Isles. L. Rogers, J. H. Cook and E. Muir.—p. 7.

*Chemotherapy of Gonococcal Infections in Women and Children. Mary Moffett.—p. 8.

*Tuberculosis of Knee: Follow-Up Investigation of Old Cases. R. C. Murray.—p. 10.

Reactions from Transfusion of Preserved Blood.—

DeGowin and Hardin report on the 1,604 blood transfusions supervised by the staff of the blood transfusion laboratory from Oct. 11, 1938, until Jan. 19, 1940. The amount of blood transfused varied from 50 cc. for infants to 500 cc. for adults. The total volume of fluid for 500 cc. of citrated blood was 600 cc. The dextrose-citrate mixture (a modification of the Rous and Turner mixture) constituted a total volume of 1,250 cc. when 500 cc. of blood was used. Many recipients received more than one transfusion. The indications for transfusion were chiefly anemia, serum protein deficiency, infections and shock. *In 146 instances the blood was administered within two hours after its collection, considered fresh blood transfusions. The other 1,458 transfusions were done with blood from one to thirty-eight days old. Reactions distinctive of preserved blood were not encountered. The incidence of the various types of reaction did not increase or decrease with the period of storage of the blood mixtures. A limit of ten days of storage at from 3 to 5 C. was found to be safe for citrated blood. Blood stored in the dextrose-citrate mixture was found to be safe for transfusion after thirty days of storage. A comparison of the incidence of pyrogenic

reactions in 951 blood transfusions with that of 7,181 parenteral injections of saline or dextrose solution showed that about 3 per cent of the febrile reactions from the blood transfusions could not be attributed to pyrogens in the apparatus or fluids used. This comparison did not exclude the possibility of the introduction of pyrogenic organisms at the time of the collection of the blood. The presence of pyrogens should be suspected when the incidence of febrile reactions is high. There were two deaths from transfusions—one from incompatible blood and one from cardiac embarrassment. Neither of these could be attributed to the use of preserved blood in contradistinction to fresh blood.

Chemotherapy of Gonorrhea in Women and Children.

—Moffett observed the efficacy of sulfapyridine in 104 cases of gonorrhea in women, twenty cases of gonococcal vulvovaginitis in inpatient children and twenty cases of gonococcal ophthalmia in inpatient infants. Of the 104 cases, forty were acute, twenty-seven subacute and thirty-seven chronic. Most of the patients were from 20 to 35 years of age. The method giving the best results was the administration of one tablet (0.5 Gm.) of sulfapyridine four times a day after food for one week. This was begun as soon as the diagnosis of gonorrhea was made. In addition, local treatment (the application of 10 per cent strong protein silver to the urethra and cervix) was carried out. This was given until the onset of the menstrual period following cessation of the drug, and thereafter once or twice weekly for another month. For the next four weeks the patients were examined once a week and local treatment was applied only if discharge or congestion persisted. Patients did not complain unduly of any ill effects. The criteria for cure required that all smears from the urethra and cervix for three months following the week of drug treatment should be negative. Nine women defaulted before observation had been completed, but of the remaining ninety-five 87.4 per cent, or eighty-three, fulfilling these requirements were cured. A study of these twelve unsatisfactory results showed that (1) inadequate dosage due to intolerance or faulty attendance for treatment was responsible for the failure to cure in four cases, (2) relapse occurred after local treatment had been missed for several weeks in one case, (3) there was no response to the drug in three cases and (4) after being negative during the administration of the drug and remaining satisfactory for varying lengths of time the gonococcus reappeared in spite of local treatment in four cases. Gonococcal complications cleared up without any treatment other than the administration of the drug. The dosage of sulfapyridine for the children with vulvovaginitis varied from a fourth of a tablet four times a day for one week in infants less than 3 months of age to half a tablet six times a day for one week in older girls. This was accompanied first by daily and then weekly vaginal swabbing with 10 per cent strong protein silver and the application of bismuth subgallate. The average duration of local treatment was four months, the limits being three and nine months. Only eleven cases were classified as satisfactorily cured. Further treatment of the cases not cured suggests the advisability of giving as a routine in all cases of gonococcal vulvovaginitis two courses of sulfapyridine separated by an interval of from ten to fourteen days. For the twenty cases of gonococcal ophthalmia the routine adopted was one-fourth tablet of sulfapyridine four times a day given with sodium bicarbonate, supplemented by irrigation with physiologic solution of sodium chloride, the frequency depending on the severity of the case. Smears from all the cases were negative within four days, even in two which had failed to respond to local treatment and protein shock. There were no relapses. The drug was discontinued forty-eight hours after the smears became negative. A total dosage of 3 Gm. sufficed in every case. The sulfapyridine was given crushed in milk to which a pinch of sodium bicarbonate was added. It caused no signs of intolerance.

Tuberculosis of Knee.—Murray reports the follow-up of 110 cases of tuberculosis traced from five to fifty-six years, average thirteen years, after the onset of the disease. In thirty-three cases of the synovial type there has been one death of pulmonary tuberculosis. In only one is the disease still active (five years after the onset), while in the others the disease is regarded as cured or quiescent. In ten there is a full range of movement and the joint is functionally normal, in eight limited painless movement varies from 20 to 100 degrees and in six

unsound ankylosis is present. Seven cases required arthrodesis; six resulted in bony ankylosis, the seventh in nonunion. Alteration in growth of limbs affected by synovial tuberculosis was observed in fifteen cases in the absence of focal bone changes; lengthening occurred twice as often as shortening. In seventy cases of the focal articular type there have been fifteen deaths. Eleven of these deaths were due to other tuberculous lesions, pulmonary and miliary tuberculosis and meningitis. In nearly all these cases, together with seven patients still alive in whom other tuberculous lesions developed, the primary tuberculous lesion was demonstrated in the knee. This type of tuberculosis of the knee, unfortunately the commonest, therefore must be regarded as a dangerous disease. Among the fifty-five living patients four have evidence of active disease in the knee joint, which in each case is unsoundly ankylosed, one of them following excision. The remaining fifty-one patients show no sign of active disease; thirty-two have sound ankylosis following excision, seven following conservative treatment, five have unsound ankylosis, three have a good range of movement in the joint and in four amputation was necessary. In five of the seven extra-articular cases the lesion healed without involving the knee joint, three having a full range of movement and two about half the normal range. In the remaining two cases the disease spread to the joint, one resulting in ankylosis and the other, following spread to the spine and kidney, ending in death. The majority of the synovial cases were treated conservatively on a Thomas splint, and excision was considered only when the lesion progressed to a focal articular type. Even in the focal articular group conservative treatment was carried out first in order to increase local and general resistance before excision or until the patient was considered old enough for excision. Following excision, bony union may occur after several years. Excluding one synovial case in which amputation was necessary owing to an accident, amputation was performed eight times because of the local condition. Four of these patients died, and four are alive and well, with the exception of the one who is now being treated for tuberculosis of the spine. In the extra-articular type two patients were subjected to evacuation of the abscess cavity, and both have a full range of movement. Three cases healed without operation and without involving the joint. Operation, therefore, does not appear necessary unless roentgenograms show the lesion to be spreading toward the joint. In the one focal articular case in which the lesion appeared to be confined to the patella, the patella was excised. This patient still has an unsound ankylosis after twelve years but there is no evidence of active disease.

East African Medical Journal, Nairobi

17:49-88 (May) 1940

- Nutrition and Agriculture. A. R. Paterson.—p. 51.
Recognition of Nutritional (Tropical) Macrocytic Anemia in Uganda and Its Previous Confusion with Malarial Splenomegaly and Splenic Anemia. H. C. Trowell.—p. 60.
Experiments on Destruction of Ticks. G. H. E. Hopkins and T. W. Chorley.—p. 71.

Lancet, London

2:1-30 (July 6) 1940

- *Acute War Neuroses. W. Sargent and E. Slater.—p. 1.
*Treatment of Lobar Pneumonia and Bronchopneumonia. C. J. McSweeney.—p. 3.
Lupus Erythematosus: Toxic Effects of Sulfonamides. S. A. Probert.—p. 5.
Modification of Paul-Mikulicz Operation. S. Pringle.—p. 6.
The Rosenthal Anaerobic Method. A. A. Miles.—p. 7.
Surgical Treatment of Varicose Veins. H. Dodd and J. B. Oldham.—p. 8.
Hemolysis in Stored Blood Plasma: Simple Method for Its Estimation. R. Hudson.—p. 10.

Acute War Neuroses.—According to Sargent and Slater, cases of acute war neuroses, such as arose in the Flanders retreat, demonstrated that men of reasonably sound personality may break down if the strain is severe enough. This does not deny the importance of constitutional factors. Compared to an average population, this group of men would almost certainly show an excessive proportion who had suffered from nervous troubles in earlier life and an excessive frequency of psychiatric disorders in the blood relatives. Nevertheless these men had

shown a satisfactory adaptation to army life and the previous history showed in most cases a man of normal intelligence, personality and work record. The stress required to produce a breakdown of such personalities was of an altogether different order from any to which they could expect to be subjected in ordinary life. It was an accumulation of strains, both physical and mental, of great intensity. The clinical picture was surprisingly uniform. There were the signs of physical exhaustion: thin, fallen-in face, pallid or sallow complexions. The expression and the whole attitude of the body was one either of tension and anxiety or of a listless apathy. Neurologic signs of a functional nature were usually present. A coarse irregular tremor of the hands was common. The resemblance to a parkinsonian picture was often increased by an immobile facies, and the superficial resemblance was so great that a number of cases had been diagnosed as parkinsonism. Reflexes were usually exaggerated, occasionally sluggish. Mentally the patients complained of the usual symptoms of the acute anxiety state: sleeplessness, terrifying bad dreams, a feeling of inner unrest and a tendency to be startled at the least noise but particularly at the sound of an airplane going overhead or any sound resembling it. The course taken by these patients under treatment was uniformly toward improvement. The change in appearance in the first few days with adequate sleep and rest and food was striking. Tremors rapidly diminished in intensity, as did also the general attitude of tension. The degree to which recovery is complete is more doubtful. It seems that these patients have gone through a process for which the term conditioning may be used. The first essential of treatment is to secure rest. This may be done in the milder cases by confinement to bed for a few days and the administration of an effective hypnotic. This must be combined with a full diet and ample fluids. The best method of securing the essential sleep varies in different patients. For some a quickly acting drug with an effect that lasts only a few hours may be all that is necessary. But the majority find difficulty not so much in getting to sleep as in remaining asleep. For these a drug with a longer effective action will be required. A considerable number of the more severely affected will require a course of continuous narcosis. It will get them through the worst period of their convalescence without their being aware of the severity of their symptoms, and it helps to minimize the process of conditioning. Any of the standard methods of narcosis may be employed. The Mira method, employed in the Spanish civil war, has been found disappointing in some cases, since the narcosis was not always complete. As a rule, continuous narcosis has not been given for much longer than a week. It was found desirable to relieve acute hysterical symptoms, including amnesias, at the earliest moment by persuasion under hypnosis, produced directly or with the aid of intravenous barbiturate.

Treatment of Pneumonia.—McSweeney compares the results of different methods of treatment in 478 unselected consecutive cases of lobar pneumonia treated in Cork Street Hospital. In the years from 1931 to 1933 a consecutive series of 120 cases were treated with daily intravenous injections of an 0.8 per cent suspension of a preparation containing iodine in combination with the colloidal and semicolloidal decomposition products of proteins (collosol iodine) until the crisis was reached. Of these, sixteen (13.3 per cent) died. In 172 cases antipneumococcus serum was used alone or in combination with the colloidal iodine. Death occurred in twenty-five (14.5 per cent) of these. In the 186 cases in which antipneumococcus serum was given together with sulfanilamide or, more often, with sulfapyridine, the mortality was 2.7 per cent. At present, antipneumococcus serum and sulfapyridine are used in lobar pneumonia at the author's hospital. The author presents results obtained with different methods of treatment in 171 unselected consecutive cases of bronchopneumonia admitted to the same hospital. With antipneumococcus serum alone the case mortality was 43.7; with antipneumococcus serum and sulfonamide (mostly sulfanilamide) 38 per cent in 1937 and 34 per cent in 1938, and with antipneumococcus serum and sulfapyridine 9.5 per cent. The great majority of the patients treated were children under 5, and the case mortality in this group was reduced from 50 per cent in 1936 and 1937 to 30 per cent in 1938 and to 10 per cent in 1939, the first complete "sulfapyridine" year.

Schweizerische medizinische Wochenschrift, Basel**70:617-640 (June 29) 1940. Partial Index**

Lymph Stream in the Blood, Interstitial Clefts and Lymph Tracks. O. Müller.—p. 617.

*Oral Chemotherapy of Gonorrhea. G. Miescher.—p. 621.

Electrocardiographic Observations in Dissecting Aneurysm of Ascending Aorta. F. Wuhrmann.—p. 627.

Oral Chemotherapy of Gonorrhea.—Miescher reports on oral chemotherapy of 964 cases of gonorrhea. Of the substances used sulfathiazole and sulfapyridine gave the best results. The drugs were administered in decreasing doses within a period of six days, 18 Gm. in all. They appeared to be equally effective in new and old, simple and complicated cases. Vaccinotherapy and local treatment were also employed. The significance of the latter appeared to be small. The percentage of cures after a single treatment was 97 and 95 respectively, with men responding somewhat better to sulfathiazole and sulfapyridine. With the time required for observation and control by provocation, men were cured in from fourteen to sixteen and women in from twenty-five to forty days. The author points out the danger of intoxication and intolerance in the oral chemotherapy of gonorrhea. Of the drugs used sulfathiazole was tolerated best. It appeared to be the most effective and best tolerated antigonorrheal preparation.

Archivos de Pediatría del Uruguay, Montevideo**11:433-492 (May) 1940. Partial Index**

Hydrolyability in Infants. M. Laguarda.—p. 433.

*Treatment of Acute Purulent Pleurisy in Children. R. B. Yannicelli.—p. 460.

Treatment of Acute Purulent Pleurisy in Children.—Yannicelli reports satisfactory results from closed thoracic drainage in a group of twenty infants and children with acute purulent pleurisy. The majority of the patients were between the ages of 3 months and 5 years. The treatment consists of draining the pleural cavity through a number 16 Nelaton catheter which is introduced through the orifice of a trocar puncture. Drainage is practiced by repeated aspiration of pus with a syringe and the catheter is left in place, closed with a clamp and fastened to the chest wall for further aspirations. At the first aspiration only from 100 to 400 cc. should be removed. Further aspirations are made at convenient intervals and in amounts of not more than 20 cc. at each aspiration in order to prevent sudden intrapleural changes. When slow decompression is indicated and when the amount of fluid is scanty, the drainage is changed into a permanent one by attaching the distal portion of the catheter to a siphon tube, the distal portion of which is placed in a receptacle containing aqueous solution of sodium hypochlorite. The catheter is frequently clamped for a few minutes for temporary discontinuation of drainage. Lavages through the sound with aqueous solution of sodium hypochlorite are indicated when the pus is thick or fetid, in the presence of false membranes and in gangrenous pleurisy, except when a bronchopleural fistula is suspected. The treatment as a rule is effective in controlling acute purulent pleurisy in from two to five weeks. The catheter is removed one or two days after complete evacuation of pus. Before the drain is removed the condition is ascertained by x-ray examination. There were fifteen recoveries in the group of twenty cases reported by the author. Some of the deaths were caused by general sepsis rather than by the pleurisy. The author concludes that the treatment is simple, is well tolerated and causes neither shock nor sudden intrapleural decompression. Rib resection becomes unnecessary. In the few cases in which there exist indications for ample drainage, the closed thoracic drainage can be converted into a wide one.

Arch. Urug. de Med., Cir. y Especialid., Montevideo**16:301-392 (April) 1940. Partial Index**

Gold Therapy in Rheumatic Fever: Indications and Technic. A. Ruiz Moreno.—p. 301.

*Clinical Diagnosis of Segmental Trunk Occlusion in Arteritis of Lower Limbs. E. C. Palma.—p. 340.

Clinical Diagnosis of Segmental Occlusion in Arteritis.—Palma found that segmental trunk occlusion of the lower limbs is a frequent complication in juvenile or senile arteritis. Arteriography is a reliable diagnostic method not

commonly resorted to because it lacks simplicity. In the presence of typical arterial intermittent claudication, clinical diagnosis can be made from the following symptoms: (1) early disappearance of pulsation of the posterior tibial, dorsalis pedis and popliteal arteries in the presence of normal pulsation in the same arteries in the opposite limb, (2) diminution or disappearance of oscillometric oscillations in the middle or lower portion of the thigh of the involved limb in the presence of normal oscillations at the same points in the opposite limb and (3) pain or cramp in the calf of the involved limb on walking. Claudication may be of short or long duration, provided the disturbances of the peripheral circulation are slight. Pulsation of the femoral artery is determined by palpation in Scarpa's triangle. Popliteal pulsation is determined with the patient's limb in Buerger's position. These results may be further investigated by vasodilating tests such as the warm bath of Babinski and Heitz, induced hyperthermia and spinal and sympathetic lumbar anesthesia. The upper limit of occlusion is ascertained by the point of disappearance of arterial oscillations. The extent of the lesion is surmised from the acuteness of peripheral functional disorders, which are acute when the occlusion is low and several arteries are involved, and moderate when the occlusion is high and only one artery is involved. The author believes that clinical diagnosis based on the symptoms is important and may be relied on in many instances as an indication for operative intervention without recourse to arteriography.

Revista Med.-Quir. de Pat. Femenina, Buenos Aires**15:451-557 (June) 1940. Partial Index**

*Thymus Rests in Exophthalmic Goiter. R. Finochietto and S. E. Luchetti.—p. 461.

Humoral Syndrome Complicating Surgery of Bile Ducts. R. S. Ferracani.—p. 504.

Thymus Rests in Exophthalmic Goiter.—Finochietto and Luchetti found, in the course of thyroidectomies, rests of the thymus microscopically verified in eight cases of exophthalmic goiter. The rests consisted of a cord of fibrous connective tissue or a lamina of fibrous and fatty tissue. The cord with or without nodules of thymic tissue was in continuity with one of the lower poles of the goiter and extended to the mediastinum behind the sternum. The lamina had their origin at the thyroid isthmus, covered the trachea and extended into the mediastinum. The authors found that these formations were not connected with real aberrant thymic gland but that they may be connected with intrathoracic goiter. These structures must be removed in the course of a thyroidectomy because they interfere with the removal of the lower pole of the goiter. Their course should be followed up to the point at which they disappear into the mediastinal tissues, in order to disclose the presence of an intrathoracic goiter, the persistence of which after an operation might give an erroneous interpretation of the results of the operation.

Bibliotek for Læger, Copenhagen**132:121-135 (April) 1940**

*Considerations on Prognosis in Suppurative Coloproctitis. O. Moltke.—p. 121.

Prognosis in Suppurative Coloproctitis.—Moltke found hemoglobin values under 60 per cent in one fifth of the patients with suppurative coloproctitis who recovered and over 80 per cent in one third of the fatal cases and therefore considers the anemia in this disorder of doubtful significance as a prognostic sign. The relation between the cells with segmented nuclei and the immature neutrophil cells in the blood, however, seems to him an exceedingly important expression of the gravity of a case. He says that all the cases in his material with a shifting to the left of over 30 per cent were fatal, while only one patient with a shifting to the left of less than 30 per cent succumbed. Less marked shifting was seen in the moderately grave cases in which remission was possible, and normal values only in the mild cases. A low sedimentation rate may also be regarded as a favorable sign.

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THE TREATMENT OF ARTERIO- SCLEROSIS OBLITERANS

SOCIAL SIGNIFICANCE AND ULTIMATE OBJECTIVE

CHAIRMAN'S ADDRESS

IRVING S. WRIGHT, M.D.

NEW YORK

The problems presented by the development of arteriosclerosis are of overwhelming magnitude both medically and socially. Their potential significance is, nevertheless, for the most part hopelessly underestimated. Yet, unless satisfactory solutions are found for the varied facets of this massive loadstone, it may prove too heavy for our present civilization.

Once before when our civilization was threatened by the weight of a great problem, a then little known man, Abraham Lincoln, suggested a mental approach which appears equally applicable to the present: "If we could first know where we are and whither we are tending, we could better judge what to do and how to do it."

For centuries men have sought the secret of longevity. The alchemists, soothsayers and astrologers flourished in the courts of many dynasties that they might prolong the lives of the rulers. The search for this secret drove men such as Ponce de Leon to the ends of the earth, to no avail.

The average span of life still remained under 40 years, although a certain percentage of the population did manage to achieve longevity. During the nineteenth century, however, in many laboratories, scientists were quietly bringing to light facts which within three short generations have markedly changed this situation. Pasteur, Koch, Semmelweis—their names are almost legion—made possible the tremendous saving of infant life; the practical elimination of many of the worst scourges from the modern nations, such as yellow fever, cholera and bubonic plague; the marked reduction in death from infectious and contagious diseases, such as pneumonia, tuberculosis and diphtheria, and a much better understanding of proper hygiene and nutrition. It has been with just pride that the medical and public health workers have pointed to the reduced mortality and morbidity rates of the population and to the fact that no group of people of equivalent size has ever achieved the health record enjoyed by the citizens of the United States. Except for a few students of trends, however, the ultimate effects of this change have not been foreseen too clearly or with sufficient analytic acumen. True, it is recognized that in 1850 the average length of life was 42 years, whereas it is now more than 60 years. In

this country there has been an increase of nearly 20 million persons in the age groups over 50 years. All of these are potential victims of arteriosclerosis unless some other disease factor produces death first. Over the age of 65 the senescent vascular changes become increasingly frequent and serious whether they affect the brain, heart, kidneys, extremities or some less vital tissues. Incapacity is usually prolonged, often lasting years, yet demanding the most exacting medical care. It is estimated that in 1980 the number of persons over 65 will be double that of today. Such predictions are not, however, always accurate. *Blackwood's Magazine* predicted in 1860 that the population of the United States in 1940 would be 303,000,000.

It is obvious that, now that the long sought for lengthening of life is available for a much larger portion of the population, it comes as a mixed blessing for which careful planning is required.

Neither the economic nor the medical aspects of this situation appear susceptible of solution in the light of our present knowledge. Prolonged and detailed experimental studies and careful critical analyses will be necessary before an intelligent approach can be attempted.

While the facets include economic, sociologic, psychiatric and other phases, this presentation must of necessity deal more directly with the medical aspects of the situation. I will therefore examine some of the facts in this regard. While the earliest evidences of arteriosclerosis are known to occur under the age of 40 there are definite degenerative changes present somewhere in the arterial trees of practically all individuals over the age of 50. All blood vessels regardless of what tissues or organs they may supply should be considered a part of the peripheral circulatory system. This conception is vital for the understanding of the problem, clearly pointing out the serious prognostic significance of one arteriosclerotic crisis for any or all other arteries and arterioles in the body of the individual. Since each decade is producing approximately half a million additional candidates for these complications, the potential problem is increasing at a serious rate.

CORRECT DIAGNOSIS

An important step toward clarifying the picture, therefore, could be achieved by a reclassification of this pathologic condition in mortality and morbidity tables. Thus, for accuracy, conditions should, when correct, be diagnosed:

Arteriosclerosis with secondary diabetes mellitus instead of diabetes mellitus with arteriosclerosis.

Arteriosclerosis of the cerebral vessels with thrombosis or hemorrhage rather than apoplexy.

Arteriosclerosis of the renal vessels rather than Bright's disease or chronic nephritis, or arteriosclerosis of the vessels of the legs instead of senile or diabetic gangrene.

If this principle were applied to the classification of the process in all organs including the coronary arteries

of the heart, the statistics would then be properly weighted and the tremendous significance of this trend would at once be obvious to all. It would be more widely recognized that of the proportion of the population over 50 years of age 60 per cent (15 million) will die of some cardiovascular-renal syndrome whereas only 9 per cent will die of cancer. A very large but as yet undetermined portion of that 60 per cent will die as a result of degenerative changes of the arteries with the cardiac, renal or other syndromes merely the results of secondary ischemia or hemorrhage.

As these syndromes frequently produce prolonged and painful disability before death, a change in philosophical approach might well be considered. Perhaps the mere prolongation of life should no longer be sought as the highest goal but rather longevity only to such a degree as it is compatible with happiness and a full life free from pain and invalidism.

It is necessary to understand the mechanisms involved before we can hope to solve the enigma of arteriosclerosis. The gaps in our knowledge are formidable. We do not know for a certainty whether this condition should be correctly classified as a disease or a degenerative process, although more recently the trend has been toward the latter designation. It is not impossible, however, that further investigation may reverse this trend.

We do not know what causes this process to take place. The etiologic factors which have been the subject of study are many, including age, diet, physical work, worry, climate and infections, yet definite proof is lacking which would make it possible to state that arteriosclerosis is a direct result of any one of these factors.

We do not completely understand the biologic phenomena by which these changes take place. Whereas arteriosclerosis can be readily produced by the feeding of cholesterol to rabbits and this can be prevented by iodides, thyroid extract, pancreatic tissue extracts and other substances, the difference in the metabolism of the herbivorous rabbit and man as regards cholesterol does not justify direct inferential conclusions.

Winternitz and his co-workers have shed interesting light on the possibility of the development of arteriosclerotic plaques from hemorrhages of the vasa vasorum. The importance of this factor has been disputed by others. Certain authors have advocated theories of direct stress and strain, dehydration, heredity, endocrine changes, vitamin deficiencies and other possibilities. Perhaps each of these factors has certain importance but we are still at a loss as to why one man develops generalized arteriosclerosis at 35 years of age with no apparent cause, whereas another man escapes equivalent involvement until he is 65. It seems likely that the incidence of sclerosis in general increases with age because of the accumulation of traumas, namely the aforementioned etiologic possibilities, during the passage of years. These factors may not, however, operate in the instance of a specific individual.

THERAPY

In spite of this situation, important contributions have been made toward the physiology and pharmacology of the normal and impaired circulation. The scope of this presentation does not permit a review of the voluminous literature on this subject. A valuable symposium appeared in the February issue of the *Archives of Surgery*. Certain principles of therapy have been evolved as a result of the combined efforts of

many workers which have favorably influenced the outlook of the individual with arteriosclerosis obliterans. It is difficult to determine at this time whether the average longevity is actually increased by these methods. Whereas in one individual the control of infection with healing of a gangrenous foot may definitely prolong his life, another patient may die earlier because his intermittent claudication distance was markedly prolonged by treatment, thus producing an increasing strain on a damaged heart with a resulting failure. I have seen what appeared to be striking examples of each of these groups. One common objective was achieved in each group, a more satisfactory life. In the first instance the gangrene was healed and the patient restored to a life of activity and freedom from pain. The second patient, who had been enabled to walk but half a block and hence could scarcely be classified as more than a semi-invalid, became able to walk from six to eight blocks, returned to business and regained his interest in life and finally increased his walking to a greater extent. After playing nine holes of golf he suddenly developed an acute decompensation, probably associated with a coronary occlusion, and died. It is not certain but seems probable that his life of semi-invalidism might have been of longer duration. The choice of the majority of the patients with whom I have frankly discussed this elective has unhesitatingly been for the fuller if shorter life.

The trend in recent years has been toward conservative therapy as against radical surgery. Marked success has resulted from this trend in the treatment of the organic occlusive disease thrombo-angiitis obliterans. The major amputation rate, which formerly averaged about 70 per cent, is now averaging from 3 to 10 per cent in several leading vascular clinics. Arteriosclerosis obliterans has been less responsive to conservative therapy for numerous reasons, a few of which follow:

1. We are dealing with older tissues with less resistance to infection and less capacity for regrowth.
2. A large percentage of these patients are seriously handicapped by diabetes mellitus, arteriosclerotic renal disease, heart disease or other complications.
3. The point of blockage in arteriosclerosis obliterans is frequently, though not always, quite far proximal, thus blocking a large arterial trunk and reducing the possibilities for collateral circulation, whereas characteristically thrombo-angiitis obliterans begins by involving the minute distal vessels, very slowly extending proximally, giving the collateral vessels a better opportunity to establish their functional capacity to the ischemic tissues in response to metabolic demands.
4. Spasm plays a less important part in arteriosclerosis obliterans than in thrombo-angiitis obliterans, and hence therapy directed at the production of vasodilatation is, as would be expected, less effectual.

In spite of these handicaps, definite improvement in the amputation rate has been achieved by the selective and considered use of the following important technics and medications:

1. Rest of the involved extremities in a controlled temperature of from 88 to 94 F.
2. Soaks and baths at similar temperatures, using only mild solutions such as saline, boric acid or azochloramide in triacetin 1:500.
3. Heat applied to the abdomen, producing reflex vasodilatation.
4. Postural exercises, preferably passive, by means of the oscillating bed described by Sanders.
5. Pressure-suction boots in a few selected cases.
6. Alcohol in the form of spirituous liquors by mouth.

7. Deproteinized and other pancreatic tissue extracts by intramuscular injections.
8. Extreme general care in the protection of the feet.
9. Meticulous attention to any open lesions, using only correct technic in their care.
10. Control of diabetes or other complications.
11. The judicious use of the sulfanilamide compounds in the presence of infections, selection being based on the organism present, if possible.

Of almost equal importance is the necessity of avoiding:

1. The use of tobacco.
2. The use of heat greater than 96 F., applied to the extremities—especially in the form of hot water bottles, heat pads, infra-red, diathermy and short wave machines.
3. The use of strong antiseptics.
4. Meddlesome surgery in unskilled hands.

Of probable or possible value in the treatment of other vascular diseases, but of questionable value in the treatment of arteriosclerosis obliterans, in my experience are:

1. Typhoid vaccine.
2. Saline or other solutions intravenously.
3. Intermittent venous hyperemia.
4. Mecholyt iontophoresis.
5. Sympathetic surgery.
6. Vasodilating drugs, nitrites and theobromine compounds.
7. Papaverine, except for its opiate effect.

Certain points should be carefully considered before amputation of an extremity is decided on:

1. The extent and spread of infection of the local lesion. Rapidly spreading highly infected gangrenous areas sometimes demand amputation to prevent septic death. These are now subject to better control with the use of the sulfanilamide group.
2. The level of blockage of the major arterial trunk of the affected extremity, the amount of compensatory reserve and the collateral vessels active. These facts can be ascertained by the use of the oscillogram, thermocouple readings with vasodilator tests, arteriographic studies, ergometric tests, histamine flare tests and other methods. Amputation should be high enough to avoid the need for secondary surgery.
3. The status of the remainder of the peripheral circulation. This is particularly important when one leg is involved. Examination frequently reveals that the circulation is actually poorer in the opposite leg, but, having escaped trauma, no open lesion has as yet appeared. Amputation of one leg in these cases is not infrequently followed shortly by the need for repetition in the second leg. It is therefore of vital importance to be conservative if possible in such a case.
4. The age and general condition of the patient. It should be remembered that about 50 per cent of arteriosclerotic patients fail to learn to walk on an artificial limb after a mid thigh amputation and that such a patient cannot usually be said to be living a full or useful life. Diabetes, when present, seriously complicates the entire picture, whether one wishes to be conservative or radical.

While it is easier to study the circulation of the extremities, information thus obtained may help to understand similar processes occurring in less accessible blood vessels.

A PROBLEM OF UNRECOGNIZED SIGNIFICANCE

The vastest of all medical problems of the future, arteriosclerosis, it remains the most neglected. The medical schools for the most part give woefully inadequate training in its study and care. Too frequently the practicing physician fails to recognize its manifestations until gangrene has occurred. The public cares little for what it considers the vagaries of old age, although all who achieve old age are liable to them. The foundations have failed to recognize its importance

and have with few exceptions, notably the Josiah Macy Jr. Foundation, concentrated on more spectacular diseases of lesser fundamental importance to our civilization. Too few research workers have engaged in its study, to a large extent because of lack of endowment. Truly, it has been a neglected field in proportion to its importance.

Here is a great opportunity for young men entering into the field of medicine for clinical and animal research. This presentation may be regarded as a challenge to them to determine the ultimate objectives in the field of geriatrics.

Man has the unhappy faculty of producing mechanical and biologic frankensteins without developing properly balanced factors with which to exercise suitable control. Witness the present world conflicts, technologic unemployment and this problem of how to handle the aged. The question may well be raised as to whether we should justifiably bend our efforts toward the further prolongation of life unless we are prepared to insure that increasing age will bring happiness to the individual and avoid unbearable hardship on the community.

400 Madison Avenue.

STUDIES ON PRESERVED HUMAN BLOOD

VI. REACTIONS FROM TRANSFUSION

ELMER L. DeGOWIN, M.D.

AND

ROBERT C. HARDIN, M.D.

IOWA CITY

When considering the use of preserved blood, the clinician is confronted with two fundamental questions:

1. Is the administration of preserved blood efficacious?
2. Is the transfusion of stored blood safe? This report is an attempt to answer the latter question by a study of the incidence of reactions occurring in 2,423 blood transfusions.

The first transfusions of preserved blood were administered by Robertson,¹ working in the casualty clearing stations of the British army in 1917-1918. Utilizing the blood-dextrose-citrate mixture developed by Rous and Turner,² he gave twenty-two transfusions. A slight chill in one recipient was the only complication. With the recent development of blood banks in the United States has come the opportunity of studying the incidence of reactions in large series of transfusions. Belk, Henry and Rosenstein³ reported jaundice or hemoglobinuria as a complication in seven of 400 transfusions. The incidence of chills, fever and urticaria was 10 per cent. In a series of 220 transfusions, Vary and Krah⁴ had an incidence of definite reactions of all types of 7 per cent and total possible reactions of 13

From the Department of Internal Medicine, State University of Iowa College of Medicine.

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per cent. In 1,415 transfusions, Diggs and Keith⁵ reported reactions occurring in 6.7 per cent of the series.

The bases of the present report are the observations on a series of 2,423 blood transfusions, in 295 of which fresh blood was employed. The remaining 2,128 utilized blood stored from one to thirty-eight days at 3-5 C. Two types of preservative were used. The blood-citrate mixture comprised 500 cc. of blood plus from 50 to 100 cc. of 3.2 per cent sodium citrate in distilled water. This blood was regularly discarded after ten days of storage because of extensive hemolysis. The blood-dextrose-citrate mixture consisted of 500 cc. of blood, 650 cc. of 5.4 per cent dextrose in

refrigerated blood before administration. We have shown previously⁷ that this is a safe procedure.

Whenever practical, the urine of the patient was made alkaline before transfusion by the oral administration of sodium bicarbonate in the hope of preventing anuria, should hemoglobinuria occur.⁸ With the exception of a few instances, the group of the transfused blood was the same as that of the recipient. Within twenty-four hours after the transfusion a member of the team visited the recipient, inspected the clinical record and personally analyzed for hemoglobin the urine passed since transfusion. Tests for blood compatibility were repeated in many instances when chills and fever occurred.

TABLE 1.—Incidence of Reactions from Transfusions of Preserved Blood

Blood-Dextrose-Citrate							Blood-Citrate						
Days of Storage	Number of Transfusions	Reactions					Number of Transfusions	Reactions					
		Chills Only	Chills and Fever	Urticaria	Hemoglobinuria	Miscellaneous		Chills Only	Chills and Fever	Urticaria	Hemoglobinuria	Miscellaneous	
0	10	0	0	1	2	.....	285	1 (0.3%)	5 (1.7%)	2 (0.7%)	0	Note 1
1	20	0	1 (5.0%)	1 (5.0%)	1	.....	164	3 (1.8%)	8 (4.8%)	4 (2.4%)	1	.....
2	40	1 (2.5%)	0	0	0	Note 2	206	4 (1.9%)	6 (2.8%)	1 (0.4%)	1	.....
3	79	0	2 (2.5%)	0	0	.....	251	2 (0.7%)	4 (1.5%)	5 (1.9%)	0	Note 2
4	58	0	3 (5.1%)	1 (1.7%)	0	.....	197	2 (1.0%)	3 (1.5%)	3 (1.5%)	0	3 and 4
5	57	1 (1.7%)	1 (1.7%)	2 (3.5%)	0	.....	173	3 (1.7%)	5 (2.8%)	2 (1.1%)	0	.....
6	49	2 (4.0%)	0	0	0	Note 3	142	1 (0.7%)	3 (2.1%)	2 (1.3%)	0	3 and 5	
7	35	0	0	0	0	Note 2	86	0	3 (3.4%)	2 (2.3%)	0	.....
8	44	1 (2.2%)	0	0	0	.....	61	0	0	0	0	Note 4
9	30	0	1 (3.3%)	0	0	.....	38	0	2 (5.2%)	0	0	.....
10	39	0	0	0	0	.....	28	0	0	0	0	.....
11	30	0	0	0	0	.....	10	0	0	0	0	.....
12	26	0	0	1 (3.8%)	0	.....	3	0	0	0	0	.....
13	20	0	0	0	0	.....						
14	30	0	1 (3.3%)	0	0	.....	2	0	0	0	0	.....
15	23	0	1 (4.3%)	0	0	.....	1	0	0	0	0	.....
16	23	0	0	0	0	.....						
17	16	0	0	1	0	.....						
18	9	0	0	0	0	.....						
19	17	0	0	0	0	.....						
20	14	1	0	0	0	.....						
21	15	0	0	0	0	.....						
22	22	0	0	0	0	.....						
23	13	0	0	0	0	.....						
24	9	0	0	0	0	.....						
25	7	0	0	0	0	.....						
26	11	0	0	0	0	.....						
27	6	0	1	0	0	Note 6							
28	2	0	0	0	0	.....						
29	9	0	0	0	0	.....						
30	3	0	0	0	0	Note 7							
31	5	0	0	0	0	.....						
32	2	0	0	0	0	.....						
33	1	0	0	0	0	.....						
36	1	0	0	0	0	.....						
38	1	0	0	0	0	.....						
Totals	770	6 (0.7%)	11 (1.4%)	7 (0.9%)	3	5	1,647	16 (0.9%)	39 (2.3%)	21 (1.2%)	2	7	

Legend:

Note 1, vomiting

Note 2, hemolytic reaction from injection of distilled water

Note 3, dyspnea

Note 4, epigastric pain

Note 5, death from incompatible blood

Note 6, death from cardiac embarrassment

Note 7, jaundice

Total number of transfusions, 2,423.

Reactions of all types, 4.8 per cent.

water and 100 cc. of 3.2 per cent sodium citrate in water. This is a modification of the Rous-Turner solution and has been described elsewhere.⁶ Blood preserved in this solution was used for transfusions when over thirty days old. All the blood was collected by members of a team working in the Blood Transfusion Laboratory of the University Hospitals. Most of the donors were relatives or friends of patients. They were of both sexes and between the ages of 18 and 60 years. The blood typing and cross-matching were performed exclusively by technicians in the laboratory. The transfusions were administered by the interns attending the recipients. The blood mixture was allowed to flow into the vein by gravity through a 20 gage needle. No attempt was made to warm the

The most frequent type of transfusion reaction proved to be the occurrence of chills and fever appearing during, or a few minutes after, the administration of the blood. This phenomenon occurred in 2 per cent of all transfusions. The temperature was usually down to normal within eight hours. In 0.9 per cent of the transfusions the recipients were observed to have chills or chilly sensations during or immediately after the administration of the blood, yet the body temperature remained normal. It was not thought that this reaction could be due to the temperature of the transfusion mixture since the incidence was so small. It was assumed rather, though not proved, that it was the result of the injection of small doses of pyogens.

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Urticaria or angioneurotic edema occurred in 1.1 per cent of all transfusions. In some cases the symptoms were so severe that the transfusion was discontinued. It was observed that some patients receiving multiple transfusions were more susceptible to this manifestation than others. No correlation could be found between the occurrence of urticaria and a history of allergic symptoms in either donor or recipient. It seems unlikely that the high plasma potassium content of the preserved blood was responsible, since there was no increase in incidence with transfusion of bloods of greater age.

In a previous paper⁶ it has been shown that hemolysis is detectable in blood stored less than five days and that the rate of hemolysis varies greatly, depending on the preservative used. One criterion for the suitability of preserved blood for transfusion, therefore, is the amount of extracellular hemoglobin in the plasma. When the limits of storage are sufficiently rigid, hemoglobinuria should not occur from this factor. In five recipients of the series hemoglobinuria occurred. None of the patients suffered ill effects. In two the condition was deliberately produced by the injection of 11.8 Gm. and 1.6 Gm. of extracellular hemoglobin respectively. Another patient receiving 1.8 Gm., however, did not excrete any in the urine. Two other recipients belonging to groups A and AB, respectively, received preserved blood of group O containing little plasma hemoglobin (1 mg. and 721 mg. respectively), but they excreted hemoglobin in the urine. It is possible that the agglutinin and hemolysin titers of the donor's serum were so high that dilution by the recipient's blood did not inactivate it.

Some writers have reported a rather high incidence of jaundice from the transfusion of preserved blood. It occurred only once in our series. A woman received a transfusion without symptoms or signs of untoward reaction. The next day she was observed to be jaundiced. The serum van den Bergh reaction was 5.5 mg. per hundred cubic centimeters (indirect). The icterus disappeared in a few days; no hemoglobinuria occurred nor could free hemoglobin be detected in the blood serum eighteen hours after the transfusion. The fact that she had been receiving sulfanilamide for the preceding week may have been a contributing factor.

Two deaths occurred from blood transfusions. A woman belonging to group O received group A blood through a series of errors in the laboratory. When about 100 cc. of the blood had been given, the transfusion was discontinued because of the appearance of marked dyspnea, cyanosis and a feeling of constriction in the chest. The patient rapidly developed signs of shock and, in spite of the administration of epinephrine and transfusion with compatible blood, she died within six hours. A high content of extracellular hemoglobin was present in the blood serum of the recipient. The time of survival was not sufficient to determine whether renal insufficiency had developed. An infant weighing 7½ pounds (3,400 Gm.) was given 800 cc. of blood-dextrose-citrate mixture in the jugular vein. Cyanosis, dyspnea and generalized edema developed suddenly. Death occurred thirty-six hours later from circulatory embarrassment. Neither of these reactions was chargeable to the use of preserved blood per se.

When the reactions of all types are tabulated in categories corresponding to the age of storage of the blood (table 1) it will be noted that there is no significant

correlation between the incidence of reactions and the age of the blood used. Nor is there a significant difference in reactions from the two types of preservatives employed. This statement should be qualified by stating that the limit of storage for the blood-citrate mixture was ten days while for the dextrose-citrate preservative the age limit was thirty days. No types of reactions were encountered from the use of preserved blood which were not already known to be complications of transfusions with fresh blood.

The manufacture of dextrose, saline and sodium citrate solutions, as well as the preparation of all apparatus used for intravenous administration of fluids and blood, was performed under unified supervision. Data were thus available which shed some light on the part played by pyrogens⁹ in producing febrile transfusion reactions. Over a ten month period the incidence of chills only or of chills and fever from intravenous

TABLE 2.—Incidence of Chills Only or of Chills and Fever from the Injection of Dextrose and Saline Solutions Compared with the Same Manifestations Occurring in Blood Transfusions Using Apparatus Prepared in the Same Manner During a Ten Month Period

	Intravenous Injections of Dextrose and Saline		Blood Transfusions	
	No. of Injections	Reactions	No. of Transfusions	Reactions
July 1939.....	1,113	32 (2.8%)	113	7 (6.6%)
August.....	1,185	12 (1.0%)	133	5 (3.7%)
September.....	1,397	4 (0.2%)	167	7 (4.1%)
October.....	1,210	3 (0.2%)	169	4 (2.3%)
November.....	1,015	3 (0.2%)	140	4 (2.8%)
December.....	1,235	0	229	8 (3.4%)
January 1940.....	1,285	9 (0.7%)	249	6 (2.4%)
February.....	1,098	2 (0.1%)	259	2 (0.7%)
March.....	1,561	12 (0.7%)	236	8 (3.3%)
April.....	1,233	4 (0.3%)	245	1 (0.4%)
Totals.....	12,292		1,940	

infusions was compared with the incidence of the same type of reactions occurring in blood transfusions (table 2). It was found that when the pyrogenic reactions from fluids were frequent there was a corresponding increase in the same type of reactions from blood transfusions. However, the incidence was always much higher in blood transfusions than in intravenous infusions. The only factors concerned in transfusions which were not present in the infusion were sodium citrate and blood. It is possible that pyrogens were present in the citrate solutions or that organisms were introduced during the collection of blood.

CONCLUSION

1. The incidence of all types of reactions was no greater from the transfusion of preserved blood than when fresh blood was used, provided proper care was taken in storing and handling it. The limits of storage time were arbitrarily placed at ten days for citrated blood and thirty days for the dextrose-citrate mixture.
2. Variations in the age of the blood used caused no corresponding variation in the incidence of reactions.
3. No types of reactions occurred from preserved blood which are not recognized as complications from transfusions of fresh blood.

9. Seibert, F. B.: Fever-Producing Substances Found in Some Distilled Waters, *Am. J. Physiol.* 67: 90-104 (Dec.) 1923; *ibid.* 71: 621-651 (Feb.) 1925.

4. The presence of pyrogens in fluids or apparatus is probably a cause of many febrile reactions during the transfusion of blood.

ABSTRACT OF DISCUSSION

DR. ALEXANDER S. WIENER, Brooklyn: The experiences of the authors with 1,940 transfusions of bank blood within a year place them in a position to evaluate the merits and demerits of preserved blood. They have an enviable record, considering the low incidence of transfusion reactions encountered, which is practically the same as our own reaction rate, though at our institution only fresh blood is used for transfusions. My experience with transfusions of bank blood has been limited to about thirty cases, rather intensively studied from the standpoint of the fate of the transfused erythrocytes in the patient's circulation. For this study, which was carried out in collaboration with Dr. George Schaefer, we made use of antisera for the agglutination of M and N of human red cells. Since these agglutinogens play no part in transfusion reactions they are disregarded when selecting donors for transfusion. For example, a patient of group A, type M, may be given blood of type AM, AN or AMN. When the M, N types of donor and patient differ the fate of the donor's cells in the patient's circulation can readily be traced with the aid of anti-M and anti-N agglutinating sera. Using this technic we found that, while fresh blood survived for periods up to 120 days in the patient's circulation, the maximum length of life of the transfused cells diminished roughly in proportion to the period of storage *in vitro*. In two cases in which transfusions of blood 20 and 21 days old respectively were given, the cells completely disappeared from the circulation of the patients within twenty-four hours. Based on these results we advised that the maximum period of storage of blood for transfusion be set at from seven to ten days. In our studies the blood taken for transfusions was kept in citrate solution; it is possible that the period of usefulness of the bank blood may be extended by the addition of dextrose as advocated by Drs. DeGowin and Hardin. However, from experiences on the preservation of blood cells for blood grouping my impression is that the fragility of the cells increases almost as rapidly when dextrose is added, even though the cells appear intact to the naked eye for longer periods. With regard to the occurrence of jaundice after transfusions of bank blood, we had only one experience, a gravely ill patient who had been given blood nineteen days old. The patient was reported to have become jaundiced during the two hours consumed by the injection of the blood, and the jaundice progressively deepened until the time of his death, six hours later. Many more cases of latent icterus were picked up by examining the patient's blood a few hours after the transfusion. The serum separated from this blood sample was noticeably icteric in comparison with the pretransfusion blood serum almost regularly in patients receiving blood more than one week old, while icterus did not occur when fresher blood was used.

DR. L. W. DIGGS, Memphis, Tenn.: The blood bank of the John Gaston Hospital, which is the charity hospital of the city of Memphis, has been in continuous operation since it was started in April 1938. The use of preserved blood has been accepted by the clinical staff as a practical and relatively safe procedure superior to the old volunteer system and particularly advantageous in the surgical and maternity services. During the first year of operation of the bank, 1,415 transfusions were given with a reaction percentage of 6.7 and five transfusion deaths, one of which was due to mismatching. During the second year 2,140 transfusions were given with 8.1 per cent reactions and one transfusion death. The reaction percentages for single months varied from 2.2 to 14.1. To test the effect of giving cold blood and to compare reactions with blood artificially warmed, an experiment was started in which the bloods were on alternate weeks warmed and on the next week given without warming except to the degree to which the equipment and tubing were exposed to room temperature. In 869 consecutive transfusions the reactions varied widely in various weeks, but there was no apparent relation between the reaction percentage and the temperature of the blood. The febrile reactions following the giving of 427 transfusions of cold blood

were 8.2 per cent and the reactions following the giving of 442 transfusions of warm blood 7.9 per cent. The warming of blood takes time and requires special equipment. Warmth favors bacterial growth and cell disintegration. Overheating of blood is extremely dangerous and readily occurs when the heating is entrusted to inexperienced student nurses. One of our transfusion deaths was attributed to overheating of the blood. In the early days of the bank, when the bloods were heated in the wards, occasional flasks of blood were cooked on gas ranges. We think that it is safer to give blood cold than to attempt to warm it. The giving of hemolyzed blood is likely to result in reaction. A simple test of hemolysis which we regularly use is to collect a test tube of blood from the transfusion set at the time the blood is filtered in the giving flask. This blood is centrifuged and the supernatant fluid examined. When the concentration of hemoglobin in the supernatant is 100 mg. per hundred cubic centimeters or above, the fluid is definitely discolored and is considered to be unsafe for use. The rate of hemolysis of blood preserved by refrigeration in citrate solutions varies widely in different bloods, but the average rate of increase in hemoglobin in the supernatant plasma is about 10 mg. daily per hundred cubic centimeters and by the tenth day there is often gross hemolysis, and by the fourteenth day gross hemolysis is the rule.

DR. HYMAN I. GOLDSTEIN, Camden, N. J.: Because of a tragedy in my family last fall as the result of a blood dyscrasia I rise to ask a question. Our efforts have always been in the direction of the erythrocytes—compatibility tests and cross matching have been limited to the red blood cells. Why not increasing interest in the direction of the leukocytes, thrombocytes and kinetocytes, and the possibility of certain reactions after transfusions being due to these other cellular elements? It appeared to me in the case cited that the blood transfusions did not help and perhaps purged the few (normal?) white blood cells that the patient had as a result of acute myeloblastic leukemia, probably because of some unrecognized reactions. In reference to the cold blood used by the authors, I cite an experience in the case of a Newark physician who developed auto-agglutination with severe hemolytic changes, owing in part at least to the changed temperature of the blood. Luck and good fortune must have played a part in the authors' studies. Much progress has been made since Hieronymus Cardanus (1501-1576) and Magnus Pegelius (1593) mentioned the possibilities of transferring blood directly from the vessels of one person to those of another. Uncountable contributions to our knowledge of the blood and the use of blood transfusions have been contributed to the literature since Andreas Libavius (1615) first advocated blood transfusion and Johannes Colle of Padua suggested such a procedure. One need only mention the earliest contributions by Christopher Wren (1656), Richard Lower (1665), Jean Baptiste Denis, and Lower and King (Nov. 23, 1667). I wish to compliment Drs. DeGowin and Hardin on their studies on preserved human blood.

DR. ALVIN G. FOORD, Pasadena, Calif.: Most of the discussion concerning the use of preserved blood for transfusions has been limited to the changes in the red cells, and the previous discussor from Camden has brought up the question of the leukocytes. It appears to me that more should be said concerning the plasma, particularly changes in complement or opsonin content resulting from preservation. Little information is available except the work of Kolmer, who found rather rapid decrease in complement in a few days of refrigeration. Since about half of the transfusions in an average hospital are given in cases of severe infections with the idea of boosting the patient's resistance, partially at least from the effect of addition of opsonins, more information on the plasma should be obtained. I should like to hear from the speaker on this phase of the transfusion problem.

DR. ELMER L. DEGOWIN, Iowa City: It was my purpose to limit the discussion to the safety with which preserved blood can be given. The question of the efficacy of stored blood obviously cannot be settled in the time allowed nor is there enough information available at present to arrive at a satisfactory conclusion. Definite objective evidence of therapeutic effect can seldom be obtained from patients receiving transfusions because the picture is complicated by the course of the

primary disease and by other therapeutic measures. It is much less difficult to determine whether a transfusion is harmful. Aplastic anemia is one of the few clinical conditions in which one can decide whether transfused erythrocytes are fulfilling their physiologic function. We have under our care a patient with aplastic anemia who has been kept alive for the last eighteen months with transfusions of preserved blood. He receives a liter of stored blood every three weeks and is thus enabled to carry on his work. If the interval between transfusions is extended to four weeks, he returns with a lower erythrocyte level than after the three week interval. Because of our observations on this patient I am at a loss to interpret Dr. Wiener's experience in which the transfused agglutinogens disappeared so rapidly from the blood stream. The objection was raised that red cells stored with dextrose showed markedly increased "fragility" in hypotonic saline solutions. This is true but it has no clinical significance. Red cells are permeable to dextrose and therefore swell. The fragility test is merely an indirect measure of cell size. Erythrocytes swelling in dextrose solutions can be reduced again to normal size by washing with isotonic saline solution. Dr. Wiener referred to the increased color of the recipient's serum a few hours after transfusion as indicating hemolysis. It is important to determine whether the pigment resulted from cells which hemolyzed in the body or from the free hemoglobin which is practically always present in the plasma of stored blood. The question has been asked whether the leukocytes can be supplemented by transfusion of preserved blood. We cannot demonstrate any increase in the recipient's leukocytes after the transfusion of either fresh or preserved blood. By the term "cold blood" we refer to the preserved blood mixture which has not been deliberately heated. Actually, if blood directly out of the refrigerator is placed in the usual gravity apparatus for administration it soon approaches the temperature of the room as it passes through the rubber tubing. Dr. Kolmer has studied the rate of disintegration of complement during storage. I believe he found that the titer became low after ten days in the refrigerator.

POSTOPERATIVE ATELECTASIS

THE ANESTHETIST'S PART IN THE DIAGNOSIS AND TREATMENT

LLOYD H. MOUSEL, M.D.
ROCHESTER, MINN.

The prevention and treatment of postoperative atelectasis are of great concern to all anesthetists, for proper management of the patient during and immediately following anesthesia in many instances probably will prevent the occurrence of such a catastrophe. Mismanagement in certain cases undoubtedly is responsible for the development of atelectasis following anesthesia.

Many theories have been advanced as to the etiologic factors involved in the production of atelectasis.¹ It has been suggested that edema of the mucous membranes, similar to angioneurotic edema, might produce enough obstruction to cause pulmonary collapse. Bronchial spasm has been suggested as a possible cause of atelectasis, but this hypothesis seems unlikely because bronchial spasm usually produces the antithetic condition; that is, emphysema with bilateral distribution. The "vasomotor theory" suggests that dilatation and stasis in the blood vessels might produce obstruction in the bronchioles by an outpouring of secretion. It is my opinion that most instances of postoperative atelectasis are caused by mechanical obstruction; that is, actual plugging of a bronchus or several bronchi by tenacious secretions which have been collected in the

tracheobronchial tree during anesthesia, by mucopurulent material which was present preoperatively, or by mucus, blood or vomitus which has been aspirated into the trachea either during or immediately following anesthesia.²

The onset of actual atelectasis probably is gradual. The bronchus becomes plugged, causing preliminary emphysema. If this plug is not removed by aspiration or if the patient is unable to remove the plug by coughing or by change of position, the air in the involved region will be slowly absorbed in the blood stream until pulmonary collapse is complete.³

The symptoms of and observations made concerning postoperative atelectasis usually follow a rather definite pattern. The patient complains of dyspnea, which frequently is out of proportion to the degree of pulmonary involvement present. There is usually a sense of discomfort over the lung involved, the pulse becomes rapid, there is a sudden increase in temperature and cyanosis becomes apparent, the degree of cyanosis depending on the amount of pulmonary tissue involved, and breath sounds become diminished or absent. In the presence of massive atelectasis the heart and mediastinal structures are shifted toward the side involved and the respiratory excursion on the affected side becomes diminished.

Many details must be attended to before and during anesthesia as well as postoperatively if the incidence of postoperative atelectasis is to be reduced. Preoperative sedation may have an effect on the development of pulmonary complications. It is a routine procedure for heavy smokers, patients suffering from chronic sinusitis and patients suffering from chronic pulmonary or respiratory infections of any kind to spend considerable time clearing their nasopharynx and tracheobronchial tree of the accumulated secretions immediately after rising from bed. Heavy smokers almost always have tenacious mucus in their air passages. Patients who receive a sedative in the evening often awaken in the morning in somewhat of a stuporous condition. Their reflexes have been dulled by the action of the sedative. Additional sedatives are usually administered early in the morning, and the patient again drifts off into a restful sleep. As a result he has had no chance or urge to clear his airway of the secretions which have accumulated during the night. It might be well to place the patient in a vertical position and encourage him to clear his nasopharynx and tracheobronchial tree before the sedative is administered in the morning. In this way much offending material might be removed.⁴ The use of atropine or scopolamine reduces the amount of salivary secretion during induction of anesthesia and no doubt makes possible a much smoother induction than could be obtained had not such drugs been administered. However, it is possible that these drugs may be responsible for the drying of secretions which are present until they become so tenacious that the ciliated epitheliums are unable to move them up into the trachea. It is important to have a patient's stomach empty and to be sure that no loose teeth or foreign bodies are present in the patient's mouth, for the aspiration of any foreign body is almost sure to produce atelectasis. Obstruction of any kind to the airway should be relieved

From the Section on Anesthesia, the Mayo Clinic.
Read before the Section on Miscellaneous Topics, Session on Anesthesia, at the Ninety-First Annual Session of the American Medical Association, New York, June 13, 1940.
1. Scott, W. J. M.: Postoperative Massive Collapse of the Lung, Arch. Surg. 10: 73-116 (Jan.) 1925.

2. Mousel, L. H.: Broncho-copic Treatment of Postoperative Atelectasis, Proc. Staff Meet., Mayo Clin. 15: 261-264 (April 24) 1940.

3. Faulkner, W. B., Jr., and Faulkner, E. C.: Postoperative Massive Collapse of the Lung: Its Cause, Prevention and Treatment, Northwest Med. 32: 87-92 (March) 1933. Glickman, L. G., and Minsky, A. A.: Postoperative Massive Pulmonary Collapse, M. Bull. Vet. Admin. 15: 415-417 (April) 1939.

4. Mousel, L. H.: Unpublished data.

immediately, for if obstruction is allowed to remain for any length of time the decreased intrapulmonary pressure on inspiration may cause extravasation of fluids into the alveoli and bronchi.⁵ After the obstruction has been relieved, it might be well to have the patient breathe the anesthetic gases against 6 or 7 cm. of water



Fig. 1 (case 1).—*a*, massive collapse of the right lung with a shifting of heart and mediastinal structures to the affected side; *b*, appearance four hours after bronchoscopic aspiration.

pressure for a few minutes to relieve any edema which might have occurred during the period of obstruction.⁵

If the patient has any amount of secretion in the airway at the termination of anesthesia or if he has vomited during anesthesia and the material has been drawn into the lungs, before he is returned to his room the pharynx, trachea and bronchi should be well aspirated. It is probably best to do the tracheo-bronchial aspiration by the direct vision method through a bronchoscope so that each separate lobe bronchus can be visualized and cleaned of any foreign material. After the patient has been returned to his room, the inhalation of 5 or 10 per cent carbon dioxide and oxygen at hourly intervals often will expand the lobe of the lung which has been collapsed. However, this method does not always produce the results desired, for it may pull a plug of mucus or foreign material deeper into the bronchus.

Morphine and other sedatives should be used sparingly during the first few hours following anesthesia, so that the patient's reflexes may return to as near the normal state as possible. The patient should be turned frequently in bed and encouraged to breathe deeply and to cough. If atelectasis does occur postoperatively, the bronchial obstruction should be removed as soon as the condition has been recognized, for if atelectasis is allowed to exist for many hours secondary pneumonitis or pulmonary suppuration is likely to develop. It is obvious that the ordinary methods of treating atelectasis, such as the patient's inhalation of carbon dioxide and oxygen, frequent turning of the patient and coughing are not likely to relieve the condition if these procedures have been carried out in an attempt to prevent atelectasis from developing. The throat of the patient should be well cocaineized by means of the application of pledgets of cotton carrying a freshly made 20 per cent solution of cocaine. The pledgets should be pressed between the fingers to remove the excess solution of cocaine before they are placed in the pyriform fossa. One pledget carrying cocaine should be passed and held directly between the vocal cords for a few seconds before the bronchoscope is passed. After cocaineization

of the throat has been completed, the bronchoscope usually can be passed without difficulty. Each lobe bronchus should be visualized and all foreign material aspirated from it. Following bronchoscopy, the administration of oxygen or carbon dioxide and oxygen is continued. The patient should be turned from side to side frequently and he should be encouraged to cough.

REPORT OF CASES

CASE 1.—There was nothing unusual in the clinical history of a woman aged 26 with the exception of chronic infection of the upper part of the respiratory tract. Appendectomy and cauterization of the cervix were done under nitrous oxide-oxygen and ether anesthesia. Anesthesia was uneventful. Twelve hours after operation the patient began to cough. Some musical inspiratory rales were heard over the thorax, but the thorax was resonant throughout. Twenty-four hours after operation the patient complained of "lower chest pain" referred through to the back. At this time there were distant breath sounds on the right, and the entire right side of the thorax was dull to percussion. Some bronchial breathing could be heard over the upper third portion of the right lung. The temperature at this time was 98.5 F. The patient became cyanotic. Roentgenologic examination of the thorax showed massive atelectasis of the right lung (fig. 1 *a*). The patient was turned frequently from side to side, 5 per cent carbon dioxide in oxygen was administered at hourly intervals, and she was encouraged to cough. Cyanosis persisted and on the second postoperative day the patient's temperature was 101.4 F.; massive atelectasis was still present. Bronchoscopic examination disclosed an inflammatory reaction to be situated around the right middle and lower lobe bronchi. A small amount of thick, tenacious mucus was aspirated from the right middle and lower lobe bronchi. The lower lobe bronchus was edematous and almost completely closed. Gentle dilation was carried out. Following dilation of the edematous tissue a small, tenacious mucous plug could be seen. This mucus was removed by aspiration. Four hours after bronchoscopy there was no dullness over the right side of the thorax. Fourteen hours after bronchoscopy there was evidence of consolidation in the right lower lobe; however, this condition rapidly disappeared and on the fifth postoperative day the thorax was clear and the body temperature receded to normal. Convalescence was uneventful. It was interesting to note the ball-valve action of the mucous plug which was found distal to the edematous mucous membrane in the right lower lobe bronchus, for, following aspiration, the atelectasis apparently completely disappeared, but it was found to be present again

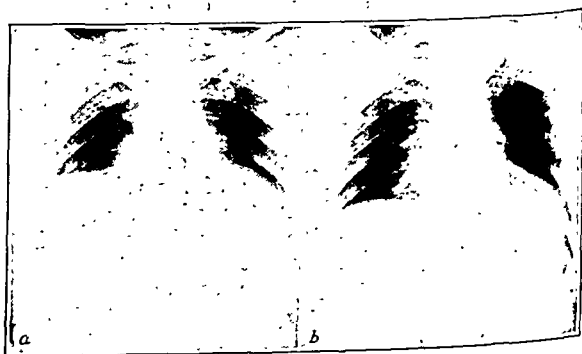


Fig. 2 (case 2).—*a*, atelectasis of the right lower lobe; *b*, complete aeration of the right lower lobe ten hours after bronchoscopic aspiration.

fourteen hours after aspiration. I assume that the edema continued to obstruct the bronchus after aspiration and atelectasis once more developed in the right lower lobe. However, the irritating mucous plug had been removed, so that the edema soon subsided and the lobe once more became filled with air (fig. 1 *b*).²

CASE 2.—An obese woman aged 31 had a slight cough on admission to the hospital. Cholecystectomy was done under nitrous oxide-oxygen, carbon dioxide and ether anesthesia.

5. Barach, A. L.; Martin, John, and Eckman, Morris: Positive Pressure Respiration and Its Application to the Treatment of Acute Pulmonary Edema, *Ann. Int. Med.* 12:754-795 (Dec.) 1938.

Anesthesia was uneventful. Twenty-four hours after operation the patient had a chill which lasted five minutes. She complained of pain in the right lower portion of her thorax. There were decreased breath sounds and decreased resonance over the base of the right lung. Her temperature was 100.6 F. Roentgenologic examination of the thorax showed atelectasis to be present in the right lower lobe (fig. 2a). The patient was submitted to bronchoscopy immediately. The right lower lobe bronchus was completely plugged with very tenacious glistening white mucus. The right middle lobe bronchus contained some mucus. The membrane of the entire right main bronchus appeared to be inflamed. There was no visible edema. The mucus was aspirated and the patient was sent back to her room. A half hour after aspiration the patient stated that she felt much better, and there were no physical signs of atelectasis at this time. Roentgenologic examination of the thorax on the following morning showed the right lower lobe to be completely aerated (fig. 2b). The patient continued to have a productive cough for several days; otherwise, convalescence was uneventful.²

CASE 3.—A man aged 41 came to operation with a diagnosis of right hydronephrosis. Urethronephrostomy and nephrostomy were done under spinal and pentothal sodium anesthesia. Twenty-four hours following anesthesia the patient became somewhat dyspneic and there were decreased breath sounds at the base of the left lung. Inhalations of carbon dioxide and oxygen were administered every half hour. The patient



Fig. 3 (case 3).—a, atelectasis of left lower lobe with elevation of diaphragm and shifting of mediastinum; b, complete aeration of left lower lobe following bronchoscopy.

was turned frequently in bed and was encouraged to cough. Forty-eight hours after anesthesia the patient became cyanotic, the body temperature suddenly increased to 103.2 F., the pulse rate was 124 beats per minute and respiration was 30 per minute. Roentgenologic examination of the thorax showed mediastinal shift and elevation of the diaphragm of the involved side with some fogging of the costophrenic angle on the left (fig. 3a). The patient underwent bronchoscopy, topical anesthesia being used. A large amount of very thick tenacious green mucus was aspirated from the left main bronchus and left lower lobe bronchus. Mild bronchitis was present on the left. The patient was relieved of symptoms immediately following bronchoscopic aspiration. Eighteen hours following aspiration the body temperature was 98.6 F. and remained near that figure; respiration and pulse were decreased within normal limits. Roentgenologic examination of the thorax showed it to be clear (fig. 3b).

CASE 4.—A woman aged 44 came to operation because of a stone in the left kidney. Pelviolithotomy was done under spinal anesthesia. Forty-eight hours after operation the patient complained of pain in the right portion of the thorax near the sternum. The respiratory rate was 34 per minute and respiration was grunting in character. The temperature suddenly increased to 102.8 F., the pulse rate 135 per minute. The patient became dyspneic and somewhat cyanotic. She had been coughing up some amount of sputum since operation. The usual measures had been carried out in an attempt to prevent atelectasis from developing. On physical examination breath sounds were found to be greatly diminished over the entire right side of the thorax. Roentgenologic examination

of the thorax confirmed the diagnosis of pulmonary atelectasis on the right (fig. 4a). The patient underwent bronchoscopy under topical anesthesia. The right main bronchus was found to contain at least 1 tablespoon of thick mucopurulent material. Severe bronchitis was present on the right. Rather marked edema of the right lower lobe bronchus was noted. All visible mucus was removed by aspiration. At the time of bronchoscopy

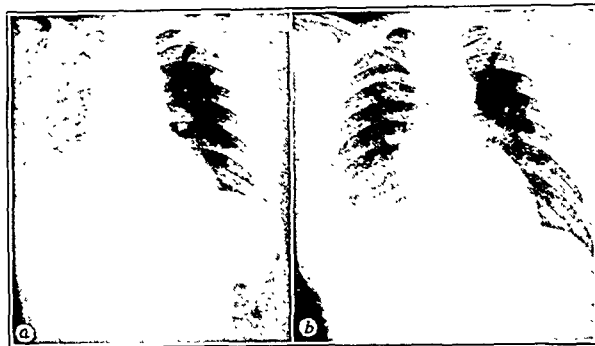


Fig. 4 (case 4).—a, massive atelectasis of the right lung with shift of mediastinum; b, aeration of entire right lung.

I doubted if this patient would derive much benefit from the procedure of aspiration, for the inflammatory reaction was so marked that it appeared that pneumonia was certain to develop. Within a few minutes following bronchoscopy the breath sounds were coming through in a normal manner over the entire right lung. The patient felt much better and the temperature and pulse rate both decreased rapidly. Twelve hours following bronchoscopic aspiration the results of roentgenologic examination of the thorax were negative for atelectasis (fig. 4b). The body temperature was 97.8 F., pulse rate 100 and respiration 20 per minute. Recovery of the patient was uneventful.

CASE 5.—A man aged 48 was submitted to cholecystectomy, choledochostomy and appendectomy. The operation was done under nitrous oxide, carbon dioxide and ether anesthesia. Twenty-four hours after operation the patient complained of pain on inspiration. The breath sounds were decreased over the base of the right lung. Routine inhalations of carbon dioxide and oxygen with frequent moving of the patient in bed were started at this time. Twelve hours later there was a progression of symptoms. Rhonchi could be heard over both lungs. The patient began coughing up bloody sputum. Cyanosis grade 2 was present. The patient was placed in an oxygen tent and improvement resulted almost immediately. On the



Fig. 5 (case 5).—a, atelectasis of entire right lung; b, aeration of right lung, residual bronchial pneumonia.

third postoperative day the patient became much worse and cyanosis was present in spite of the oxygen which was being administered. The temperature rose to 101.5 F., pulse 100 per minute and respiration 25 per minute. A diagnosis of atelectasis of the right lung was made (fig. 5a). The patient underwent bronchoscopy under topical anesthesia. A fairly large amount of mucopurulent material was removed from the right main bronchus and a small amount of purulent material was taken from the left main bronchus. Immediately following broncho-

scopic aspiration the patient looked and felt much better. The breath sounds were coming through over the base of the right lung at this time. A roentgenogram of the thorax taken immediately following bronchoscopy showed marked improvement (fig. 5b). The body temperature dropped to 99.8 F., the pulse rate was 76 and the respiratory rate 18 per minute within a short time after bronchoscopy. Inhalation of carbon dioxide and oxygen and frequent turning of the patient were resumed. Low grade bronchial pneumonia was treated; otherwise convalescence of the patient was uneventful.

CONCLUSIONS

1. Much can be done by the anesthetist toward preventing postoperative atelectasis.
2. Patients who have aspirated vomitus or who have an accumulation of mucus, blood or other material in the trachea at the termination of anesthesia should be submitted to tracheobronchial aspiration before leaving the operating table. The bronchoscope can usually be passed without difficulty if it is done before the patient has recovered from the anesthetic.
3. Postoperative atelectasis can be successfully treated in most instances by bronchoscopic aspiration.
4. Bronchoscopic aspiration should be carried out as soon as possible after the diagnosis is made in order to prevent pneumonitis or pulmonary suppuration.

ABSTRACT OF DISCUSSION

DR. URBAN H. EVERSOLE, Boston: The aspiration of fluid from the respiratory passages for the prevention and treatment of pulmonary complications due to atelectasis cannot be overemphasized. Unfortunately, bronchoscopy has too often been looked on as a hazardous procedure to which a seriously ill patient should not be submitted. I have become convinced that it is not a hazardous procedure. All patients who have demonstrated their inability to reexpand a collapsed portion of the lung spontaneously or to raise fluid which has accumulated in the tracheobronchial tree should immediately be submitted to this procedure. There are many patients who have evidence of a large amount of fluid in the tracheobronchial tree which they are unable to raise spontaneously but who do not have evidence of definite areas of atelectasis. Simple aspiration of this fluid through a number 22 French urethral catheter is frequently all that is necessary. This procedure may be carried out after spraying the pharynx with cocaine. The catheter can best be introduced through the nose and guided into the larynx by means of forceps under direct vision through a laryngoscope. There is another group of patients in which I have found suction bronchoscopy of great value. These are patients suffering from suppurative pulmonary disease such as bronchiectasis or lung abscess. Even though these patients may have been treated by postural drainage for long periods of time, the induction of general anesthesia may result in the release into the larger air passages of large quantities of fluid. This release of fluid may be quite early in the induction and before there is sufficient relaxation for an intratracheal tube to be introduced with facility, through which fluid can be aspirated. This fluid may constitute a real danger to the patient's life, as he may actually drown in it. Even if this fluid is not released in amounts large enough to endanger the patient's life from drowning, it may result in a spread of the infection. I have adopted the following routine: 1. The patient is brought to the operating room and under cocaine topical anesthesia a thorough aspiration of the respiratory passages through a bronchoscope is performed. 2. The bronchoscope is removed and an intratracheal tube is immediately inserted while the patient is still awake. 3. General anesthesia is now induced with the intratracheal tube in place. Fluid that may accumulate during the course of the operation can be aspirated through the intratracheal tube by means of a urethral catheter. 4. Immediately after the operation is ended a thorough aspiration of the tracheobronchial tree is again carried out through a bronchoscope while the patient is still under general anesthesia. 5. During the course of their convalescence these

patients are submitted to suction bronchoscopy as often as there is evidence of fluid accumulation which they are unable to raise themselves.

DR. HERMAN J. MOERSCH, Rochester, Minn.: Dr. Mouse's presentation is valuable and timely. He has emphasized the importance of postoperative pulmonary complications and the important role the anesthetist should play in the prevention, the diagnosis and the treatment of postoperative pulmonary complications. Postoperative pulmonary complications may occur in about 10 per cent of patients who undergo operation on the stomach and duodenum, and in about 4 per cent of those who undergo operation on the lower part of the abdomen. Massive atelectasis of the lung was first described by Pasteur in 1890, but scant attention in this country was paid to its importance until after the first World War. Its great importance in relation to postoperative pneumonia is now appreciated. The hypothesis most generally accepted is that which postulates that postoperative pulmonary atelectasis occurs as a result of obstruction of the bronchus due to aspiration of material into the bronchus in the course of the operation, or retention in the bronchi of secretions which normally are expelled. Support for this hypothesis is given in the studies of Gray, who found that he could reduce the incidence of postoperative pulmonary complications by about 30 per cent simply by placing the patient in the Trendelenburg position after operation. It is my opinion that, if it was possible for the patient to leave the operating room with a so-called dry lung and to remain in that condition until the cough reflex returns, we could eliminate almost entirely postoperative pneumonia. There are many methods which can be employed in the treatment of postoperative atelectasis. Among them bronchoscopy holds a very important position, as it permits the aspiration of retained secretions the presence of which in the bronchial tree produces the atelectasis. There may be some difference of opinion as to who should carry out the bronchoscopic aspiration when indicated after operation. The ideal arrangement would be to have a skilled bronchoscopist available at all times, but this is not always possible. When a skilled bronchoscopist is not available, the anesthetist, if he has had proper training in the procedure of bronchoscopy, is in a very favorable position to carry out the procedure, for no one follows the course of the patient more closely than the anesthetist during and immediately after operation. By such an arrangement I am sure that many a life that otherwise might be lost because of postoperative pneumonia would be saved.

DR. F. ELMORE HUBBARD, Montclair, N. J.: I should like to ask what type of bronchoscope the doctor has recommended.

DR. LLOYD H. MOUSEL, Rochester, Minn.: I am glad that Dr. Eversole mentioned suction through a soft rubber catheter. This procedure can be carried out satisfactorily in many instances, particularly if an intratracheal tube is in place. If a bronchoscope is not available, suction through a catheter should then be carried out in an attempt to remove all foreign material from the tracheobronchial tree. Aspiration through a bronchoscope gives the anesthetist the advantage of being able to visualize each separate lobe bronchus and leaves nothing to chance. Foreign material or mucus then can be aspirated from each separate lobe bronchus. I use a Negus bronchoscope because I received my training with that particular instrument. The Negus bronchoscope has the advantage of having both proximal and distal lighting. There are several good bronchoscopes on the market. Any of them should be satisfactory.

Mental Factors.—The commonest mental factors derived from the immediate environment are financial and business worries, domestic difficulties, dissatisfactions of all kinds, disappointments and worries in the sexual sphere and deaths of relatives. It is such situations as these that the individual, especially the susceptible individual, finds it difficult to face. He may surmount one difficulty successfully only to go down before an accumulation of troubles. It is not the situation itself that matters, but what the subject feels about it.—Henderson, D. K., and Gillespie, R. D.: *A Text-Book of Psychiatry for Students and Practitioners*, London, Oxford University Press, 1940.

THE MENTAL HYGIENE ASPECT OF
THE TRAFFIC ACCIDENT

LOWELL S. SELLING, M.D., Ph.D., Dr.P.H.

DETROIT

In 1937 motor vehicle accidents were ninth in the list of ten principal causes of death in the United States. In spite of this, public health authorities have not given this cause of death as much attention as they have to others. When one realizes that in that year 39,643 persons died in highway accidents¹—a mortality rate of 30.7 per cent—one must admit that if public health authorities, psychiatrists and others interested in the medical aspect of life and death can take any part in the solution of the traffic accident problem it is their duty to do so.

One can emphasize this even more definitely by pointing out that among persons in the youth range, from 5 to 19 years of age, in 1937 motor vehicle accidents were the second highest cause of death,² and that in 1939, while the death rate decreased, resulting in only 32,100 deaths, the number of persons injured was appallingly large, 1,210,200.³

One reason, undoubtedly, why health departments and mental hygiene clinics have not taken an active interest in attempting to control this phase of mortality and morbidity is that the work seemingly is being fairly well done by other agencies. Whereas the health departments collect statistics through birth and death certificates, the police departments, with their accident investigators, not only are able to determine the fact that a victim died or was injured but can secure all of the accompanying data that might be used to educate the public or to point out the need for specific engineering changes on the highway. The material for the selection of such data is not in the hands of health departments, and it need not be, for it is frequently necessary to make arrests at the scene of the accident, which is the duty of the police and not of the health authorities.

In spite of the fact that the Psychopathic Clinic of the Recorder's Court has been actively engaged in studying traffic offenders since August 1921 and, in 1929, reported the psychiatric observations in a group of 100 cases,⁴ the attention of psychiatrists and public health authorities has not been extensively directed toward the traffic problem.

While there are, perhaps, a half dozen psychologists with scientific training directed toward the analysis of human mental processes, too few experts who are medically trained along the same line, that is, psychiatrists, have taken an interest in this problem; yet it is undoubtedly true that physicians practicing in mental hospitals and mental clinics frequently have the traffic angle of their cases brought directly to their attention. But the treatment and correction of the traffic problem through psychiatric means are not in the minds of most psychiatrists, since their practice in clinics and hospitals is overshadowed by the problem

of correcting the ailment rather than of considering the ailing person in the light of a potential traffic menace.

THE PLACE OF MENTAL HYGIENE

The question must be raised of how much of a role mental hygiene can play in the prevention of traffic accidents. In analyzing statistics with regard to the causes of death one finds, for instance, that it is not the inexperienced driver who gets into trouble, for 95 per cent of operators involved in accidents in 1939 had had a year or more of experience in driving an automobile.⁴ Eighty-five per cent of accidents occurred on clear dry days⁵ and in 77 per cent of cases the pavement was dry,⁶ so that weather does not play a predominating part. Seventy-six per cent of the cars were going straight when involved in the accident;⁷ 35 per cent of the accidents occurred between intersections and 13 per cent on the straight highway.⁸ On this basis one cannot emphasize engineering as being to blame, for the engineers have provided straight safe highways.

The question of mechanical failure of the car is often brought up. It must be admitted that statistics on this subject are poor, since an automobile which is involved in an accident sufficiently serious to be reported is usually thrown out of adjustment in many ways so that a test of the car after the accident does not give accurate information as to its condition previous to the accident. The assumption was made in a report in 1937 by the Michigan State Police, covering a two months period, that only about 2 or 3 per cent of accidents could be ascribed to mechanical failure of the car. I myself believe that this percentage is too high because a great number of cars, even new ones, may be out of optimal adjustment at any given time, but the apt and careful driver learns to compensate quickly and mechanically for these changes in adjustment, and, although he has the trouble rectified as soon as possible, many cars which are not in good adjustment are on the streets but are never involved in accidents.

This throws the problem directly back on the human element. Pedestrians account for 38.9 per cent of deaths and 24.3 per cent of injuries as a result of traffic accidents. The pedestrian in many instances, was more to blame than the driver, which emphasizes the fact that the human element remains important whether the person at fault is the pedestrian or the driver.

It is, of course, much easier to prescribe therapy for the driver because he must be licensed and, as in Detroit, may have to be examined as a part of the licensing procedure or as part of the evaluation of his guilt if he commits a traffic offense. Pedestrians—except in cases of fatal accident in which an autopsy is done—cannot be subjected to physical, and certainly not to mental, study.

Nevertheless, it is known that alcoholism plays an important part in pedestrian deaths and that physical failure due to age or illness is also important. Pedestrian control is as important an aspect of the psychology prevention of traffic accidents as is driver control.

On the basis of all the previously presented facts, I should be inclined to eliminate the engineering aspect of accidents and to consider the two current therapies of enforcement and education as being closely associated with mental hygiene. The rationale which lies

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Read before the Section on Preventive and Industrial Medicine and Public Health at the Ninety-First Annual Session of the American Medical Association, New York, June 14, 1940.

1. Physicians' Handbook on Birth and Death Registration, United States Department of Commerce, Bureau of the Census, 1939, table 4, p. 86.

2. Smash Hits of the Year—The Travelers 1940 Book of Street and Highway Accident Data, Hartford, Conn., Travelers Insurance Company, 1940, table 1, p. 3.

3. Raphael, Theophil; Labine, A. C.; Flinn, H. L., and Hoffman, L. W.: One Hundred Traffic Offenders, Ment. Hyg. 13: 809-824 (Oct.) 1929.

4. Smash Hits of the Year, table 8, p. 24.

5. Smash Hits of the Year, table 9, p. 25.

6. Smash Hits of the Year, table 10, p. 25.

7. Smash Hits of the Year, table 12, p. 28.

8. Smash Hits of the Year, table 13, p. 29.

behind proper enforcement cannot be considered in great detail here. Police procedures, through long devolution, became more or less indifferent toward the physical and mental aspects of the offender until the establishment of criminologic clinics during the past quarter of a century. Even now the clinical aspect is a minor consideration in enforcement, and the individual as a mental health problem does not exist for the policeman who has a routine to follow and whose effectiveness is determined more or less by the number of arrests he can make and the assurance in any community that a violation will be followed by a sure arrest. In other words, in enforcement the mechanism of fear is emphasized, and, while fear has its therapeutic uses, the application of it by the police perhaps engenders other emotions which eventually defeat the purpose of strict enforcement.

It must be admitted that traffic officers in most large cities are given a certain amount of leeway in their power of arrest and can give warnings and advice. The value of such warning and advice must rest on the personality of the officer and his individual insight, and of course, since there is such a plethora of policemen, the range of therapeutic aptitude must be extremely broad.

MENTAL HYGIENE METHODS

The problem, then, rests directly with mental hygiene, and the mental hygiene approaches are twofold: educational and clinical.

Most public health education springs from one of the central public health agencies or, in the larger cities, from the departments of health themselves. The methods of publicity and procedures similar to those used in health education are frequently utilized by the police and by private agencies, such as automobile clubs and insurance companies, in education in accident prevention.

I feel that radio and newspaper education along safety lines are superior in some ways to those which have been invoked in the past by smaller health agencies for disease control. There are, of course, more funds available from insurance companies and their ilk than from municipal fiscal authorities. This would make a difference in preparing an interesting radio program. When there can be a little insurance advertising, commercial firms with funds can pay for better hours on the air and better prepared programs.

I made a simple survey of the situation in Detroit. I found that practically every type of educational facility which is mentioned as being of value in health education is being applied to the safety problem. There is, of course, some incoordination because of the fact that each sponsor of a radio program and each municipal department has its own ideas—often inept and amateurish—of how results are to be obtained. Data submitted over the air are not based on scientific study, and the attention of the listener is directed toward what the individual agency considers advisable rather than toward what might be uniformly considered a good procedure. By that I mean that on one day there may be a radio talk from one station dealing with speeding which flatly advises against driving over a certain rate, while the next day another station may discuss the *prima facie* speed limit which permits persons to evade the speeding laws by virtue of the fact that, when no lives are endangered, speed need not be limited.

This is different from health education work, which in Michigan is being done by a centralized council in

which all radio and at least one newspaper production, no matter on what medical subject, are submitted to committees of the local and state health agencies.

In Detroit the following traffic educational programs were employed during May 1940: On the five principal radio stations a series of talks was presented once a week; the police department had charge of this; in addition, there was an entertainment program by the local motor club which contained safety advice; the two leading Detroit newspapers carried a safety cartoon once a week, and occasionally such a cartoon appeared oftener than that. There is no safety dramatic radio program at the present time or any continued safety educational column like that of Logan Clendening in the field of medicine. The foreign language newspapers are not being systematically used, although 35 per cent of the patients coming through the clinic are foreign language speaking. There is a poster campaign in English on the street cars and busses advising the pedestrian; these posters are produced by the Detroit Industrial Safety Council, which, it might be said, by means of campaigns has vastly cut down the number of traffic accidents among employees of the various industrial plants in the city. These employees have even reduced their accident records when not driving plant vehicles. There is, however, nothing except this poster campaign directed toward the pedestrian.

There is but little active campaigning directed against the drunken driver in the sense of preventing him from drinking and driving. There is much newspaper talk but little tendency toward the psychiatric control of drinking. If drinking, at least excessive drinking, is an escape mechanism, that mechanism must have a basis in some problem from which the person desires to escape. Such problems must be solved clinically by a lawyer, a physician or, more properly, a psychiatrist. The amount of psychiatric help needed for drinkers is obviously great when one realizes that 7.3 per cent of the drivers involved in accidents in 1937 had been drinking and that 12.9 per cent of the pedestrians killed in that year had also been drinking.⁹ This offers a serious problem, which is not to be solved by the mere creation of apparatus for determining the amount of alcohol in the body fluids of the driver in order to obtain a conviction for drunken driving.

If a man is chronically alcoholic, at least from a psychiatric standpoint, punishment will not keep him from drinking. Of course, a second conviction of drunken driving in Michigan makes it mandatory that his license be revoked, so that he can no longer drive. Most of the drunken drivers who have been referred to the Psychopathic Clinic have had but little consumption of alcohol at the time of the offense, but rather have taken a small amount on an empty stomach when under tension, resulting in a more serious situation than the abnormal imbibition of the heavy drinker, which causes him to lose consciousness or makes his behavior so obviously incompetent that his friends will not permit him to drive.

THE CLINICAL APPROACH

The next phase of accident prevention from the psychiatric standpoint rests in the hands of clinics. The usual procedures of mental hygiene clinics are on the whole applicable to the driver, but we at the clinic have found that special standards and additional examination processes are necessary. As an example, in the case of a refractive disorder of the eyes it is

⁹ Death Begins at 40, Hartford, Conn., Travelers Insurance Company, page 11.

known that significant eyestrain or difficulty in reading print occurs in children at a certain level, presumably about 20/50 in each eye. To carry this problem of acuity of near vision over into traffic would be manifestly unfair because traffic is a far vision problem. Some standards set up at the present time on the basis of visual deficiency in reading must still be open to question when applied to traffic.

From the standpoint of mental hygiene we have no standards except that we recognize that psychotic and feeble-minded persons should not drive. It is manifestly impossible to make a psychiatric examination of all candidates for a driver's license—the expense in money and time would be prohibitive.

In Detroit a system has been worked out by the police department which to some extent solves the problem. When a person is adjudged insane in the probate court, a record of this adjudication is sent to the secretary of state's office in the state capitol and the psychotic person's license is revoked. All candidates coming before the licensing examiners of the Detroit police department have their records checked with the psychologic clinic of the board of education, and those who have been diagnosed as feeble-minded are, as a rule, refused a driver's license. Where the deadline should be drawn in a case of this sort, i. e. under what conditions a person with borderline feeble-mindedness should be permitted to drive, is still a question. The answer in this type of problem seems to be individual clinical examination by trained examiners.

Some sort of screening process is necessary to make the best use of clinics, because in our experience a thorough survey of a driver is not possible in less than four hours. Many of the stupid or extremely maladjusted persons who come into the clinic require over a day, which would mean eight hours or more for examination. Our examination consists of the usual mental hygiene procedures of a physical examination, application of the proper psychologic tests, taking the social history and coordinating all of these with a psychiatric examination. In addition, for the mechanical problems of traffic we have had to devise and adapt a number of aptitude tests for reaction time, judgment of speed and distance, color blindness and knowledge of traffic laws, as well as other traits which need no enumeration here.

Each one of these special procedures is of importance; even the physical examination beyond obvious capacity to show organic competence to manipulate car controls is of value from the mental hygiene point of view. A case was brought to our attention characterized by extremely aggressive behavior on the part of a driver. He had a tendency to speed, to cut in and out of traffic and to fail to stop at stop streets. The physical examination revealed that he had had encephalitis and at the present time presented an obvious parkinsonian syndrome. On actual mechanical aptitude tests he was not so retarded that under ordinary conditions he would not be a safe driver, but his whole attitude indicated a compensatory reaction because of his rejection by girls. His problems in other spheres brought forcibly to our attention that it was not the crippling effect of the disease but its effect on the patient's mentality and his attitude that was of greater importance.

The social history in the case of a traffic offender is of great value. Careful analysis of reckless drivers, of whom we see a great many, directly reveals to us some basic reasons for drivers getting into trouble.

For instance, the boy who is suppressed by his parents and is not allowed to drive until he can get a license of his own volition borrows the cars of others and drives madly. One cause of such behavior is bravado, to show his parents that he can do things contrary to their beliefs.

Almost every phase of the social history—childhood, schooling, occupational adjustment, marital and sexual relations and recreational habits—may have a bearing on the person's attitude toward driving. For example, it is not infrequent to have a man who is browbeaten by his wife—evidence of which comes out in the marital part of the history—become very aggressive when behind the wheel of a high powered vehicle, when he is, of course, dangerous.

The psychologic and psychiatric examinations are of great importance. When intelligence is rated below a certain level (I do not feel competent to give a definite level of the intelligence quotient at which this occurs), a driver is obviously not competent to drive no matter how well he may react mechanically. His judgment in an emergency has a much greater chance of being faulty than in the case of a normal person. In addition, we find that feeble-minded persons have a much more antisocial attitude, owing to the fact that they are not able to note and assimilate in as efficient a fashion the reactions of others toward antisocial types of behavior. The attitude of an aggressive and dangerous driver may be caused by a certain inward mechanism, such as that described in the case of the subdued boy previously mentioned. Probably all young persons are aggressive and egocentric drivers, and only as they grow older are they able to comprehend the sociologic factors impinging on them which tend to mold this juvenile behavior into acceptable adult conduct.

In a previous paper¹⁰ I cited cases of neurotic individuals who had compulsive tendencies to injure and maim father substitutes or persons challenging their egos. The same development of complex material which causes the neurosis may lie behind various kinds of traffic offenses; the man who has a deep oedipus complex may attempt to run down men in a safety zone because these men are father substitutes. This is particularly true in the case of policemen, who are definitely a symbol for law as manifested by the father. The anxiety neurosis has a somewhat similar cause, but the manifestation of the psychodynamics of the traffic offender with such a neurosis is likely to cause accidents because of his brooding, worries, distractibility and inadequate interest in the task at hand—driving. So individuals with a major neurosis should not be permitted to drive. On the other hand, since neuroses, as a rule, are curable, particularly in those cases in which medical help can be secured, such sufferers may, after a series of psychiatric treatments, be restored to the road.

The psychotic drivers have already been mentioned. It is obvious that no psychotic person should drive, but the presence of the condition can be elicited only by a psychiatric examination. In our experience with a highly selected group of more than a thousand offenders, about 4 per cent were found to be psychotic. Of course, since these persons were referred to us because of their bizarre conduct in court or at the time of arrest, the percentage is higher than that found in a random sample of the driving population.

10. Selling, Lowell S.: The Psychiatric Findings in the Cases of Five Hundred Traffic Offenders and Accident-Prone Drivers, *Am. J. Psychiat.* 97: 68-79 (July) 1940.

CONCLUSION

Although the general educational procedures and clinical method of attacking traffic problems offer an obvious approach for mental hygiene, one can expect in the future to see the attack on the abnormal personalities expanded. With the increased development of school medicine and psychologic clinics attached to schools, there can be no valid reason for not detecting those who are physically and mentally incompetent to drive a car before they reach driving age. If they are treatable the process of treatment can be initiated to benefit both the potential driver and the general health of the community.

One obvious method which should be highly worth while is the proper education of the new drivers. It is to be hoped that those children who have gone through the schools and have already had extensive safety education will be better drivers as they reach driving age. With the establishment of formal courses to teach children properly to drive rather than allowing them to learn about driving by trial and error, as the older generations have, one can anticipate even greater success. Mental hygiene will enter into this situation immensely, for the interpersonal reactions of the driver depend on his emotional and mental adjustment toward himself and toward other people, and this, of course, lies in the field of mental hygiene.

To summarize then one can say that, while engineering and enforcement are important approaches to the elimination of traffic accidents, greater need, and perhaps greater hope, lies in the attack on the abnormal personality and in the dissemination of material for normal persons which will tend toward changed attitudes in the matter of driving. Mental hygiene in its aspects of public health education toward better thinking and of preventive psychiatry in the form of clinical treatment of persons with bizarre conduct has already demonstrated in our clinic that it is a useful life saving service.

Whether the basis of the attack on traffic problems should be in health departments of the various communities cannot immediately be determined, but certainly some unification of safety education is called for. In the light of the extensive experiences of health departments, national and local, in the field of health education, these organizations can definitely be considered as fulcrums for a unified and expanded mental health program for drivers.

ABSTRACT OF DISCUSSION

DR. DANIEL BLAIN, New York: There are more deaths due to this one form of accident than from typhoid, smallpox, measles, scarlet fever, whooping cough, diphtheria, erysipelas, meningitis, malaria, rheumatism and syphilis put together. This amounts to a serious epidemic, now chronic for twenty-seven years; yet the medical profession has been singularly uninterested. Faulty cars, alcohol, exhaustion, disease and age play a part. Certain accident-prone drivers are responsible for a large number of accidents. With due deference to all these causes, I should like to suggest the greatest menace to the eventual solution of the problem: the one-accident driver. Figures show that of 4,500,000 accidents of all kinds one third are due to accident-prone drivers. These I think may be said to be ill mentally or physically. That leaves 3,000,000 accidents, 600,000 injuries and 20,000 fatalities a year, presumably due to normal people, people perfectly capable of acting properly, who can see, hear, stop and steer the car but who at one time in all their comings and goings have an accident. This is a real major health problem, one not even scratched by existing plans, one barely mentioned in any publication. It is

the one-accident driver who is the menace because there are so many of him. It is true that education tries to reach people in the mass, but where is the education that deals with people's emotions, their rivalries, competition, instincts, timidity, compulsion drives, absentmindedness, carelessness and, above all else, the deep laid gambling instinct, the willingness to take a chance, the belief in the magic of their own luck, the unwillingness to face the facts of their own chances of crashing sooner or later, the unconscious motive of aggression, revenge, the inner demand to hurry and pass everything, compensation for inferiority, or the Jehovah complex that "I am better than any one else and deserve the whole road," and so on? To conclude, the accident problem narrows down to finding, eliminating and preventing from driving a small group of high accident drivers, and the enormous task of influencing the great public who make up the mass of pedestrians and relatively normal drivers who contribute to the great percentage of accidents.

AN OUTBREAK OF DERMATITIS
FROM NEW RESIN FABRIC
FINISHES

LOUIS SCHWARTZ, M.D.

Medical Director, U. S. Public Health Service
WASHINGTON, D. C.

LOUIS W. SPOLYAR, M.D.

FRANK M. GASTINEAU, M.D.

JOHN E. DALTON, M.D.

INDIANAPOLIS

ADOLPH B. LOVEMAN, M.D.

LOUISVILLE, KY.

MARION B. SULZBERGER, M.D.

ELLIS P. COPE, M.D.

AND

RUDOLF L. BAER, M.D.

NEW YORK

In March 1940 the Office of Dermatoses Investigations of the U. S. Public Health Service received a notification from Dr. Donald S. Mitchell, of Montreal, Canada, that there were many cases of dermatitis occurring in Canada on persons wearing cotton fabrics finished with a preparation made by a large American chemical manufacturing company. He asked whether we had a record of such cases occurring in the United States.

The manufacturers of the product were notified and they stated that they had no record of such cases in this country, despite the fact that they had sold it to many finishing factories. They also stated that they had performed patch tests on human beings with the material before they placed it on the market and that they had obtained no reactions. They further stated that the finish as sold by them was diluted with various other chemicals in the factory where the finishing was done before it was applied to the fabric, and they thought that the dermatitis might be caused by one of the chemicals added to the finish by the finishers.

The Office of Dermatoses Investigations requested that the chemical company send samples of their finish (a milky looking emulsion), and these samples were forwarded to Dr. Mitchell for patch testing his patients. He found that even though he diluted the finish with 99 parts of water, a piece of gauze dipped into it gave positive patch tests on his patients. The manufacturer of the finish was then requested to send samples of each of the ingredients used in the finish. Of these ingre-

dients xylene, dupinol (a wetting out agent and emulsifier) and an acid ester gum were suspected as the possible irritants, the other ingredients being inert substances, such as starch. The suspected chemicals were forwarded to Dr. Mitchell, who again patch tested his patients with these substances in the dilution in which they were contained in the finish. He obtained reactions only from the ester gum. Therefore it appears that this was the principal sensitizer in the finish, although traces of xylene remaining in the finish may also have played a part, producing sensitization by aiding the acid ester gum to penetrate the skin.

Ester gums are combinations of natural resins (such as rosin) with glycerin. They can be made by combining rosin with glycerin or directly from a combination of glycerin with the oleo resin. The principal ingredient of rosin is abietic acid, and the degree of neutralization of the abietic acid with the glycerin determines the acid number of the ester gum. Rosin was found to be the chief irritant in adhesive plaster,¹ and it is to be expected that an ester gum with a high acid number (containing uncombined abietic acid) if kept in contact with the skin will cause dermatitis in a manner similar to that caused by adhesive plaster.

While the investigation of the dermatitis in Canada was under way, reports were coming into the Office of Dermatoses Investigations of dermatitis occurring in Missouri and other parts of the United States from "shorts" sold in chain stores. The dermatitis was characterized by intense pruritus and covered most of the skin area touched by the shorts. In some cases the inflammation was so severe as to cause systemic symptoms and required hospitalization. In one case a circumcision was necessary to relieve the edema of the foreskin. A visit to the principal office of one chain store showed that it had put about 30,000 dozen of these shorts into its branch stores, but as soon as it received reports that these were causing dermatitis it recalled all those that were not sold, amounting to about 8,000 dozen. In the meantime it had received forty-eight complaints of dermatitis caused by the shorts, occurring in various parts of the country. Some of these were confirmed by positive patch tests with pieces of the shorts. The shorts consisted of cotton dyed in various combinations and finished. No one combination of colors was involved. The cases of dermatitis occurred from all the colors. An analysis of twenty-seven cases according to color and lot is given in table 1.

Although the dyes in these shorts bled when immersed in water, patch tests on the patients with the dyes and with the fabrics were negative, but patch tests with the finish were positive. Investigations showed that the fabrics in the shorts were all dyed and finished in one finishing plant, and inquiry at this plant revealed that the finish it used was purchased from the same company and was the same finish which caused the dermatitis occurring in Canada. This finish when applied undiluted to the shaved skin of rabbits produced a dermatitis within seventy-two hours.

While this investigation was going on, notice was received from South Carolina that dermatitis was occurring among the girls sewing and handling cotton fabrics manufactured in one of the South Carolina mills. Investigation at this mill showed that these fabrics were also treated with the same finish.

About this time one of us saw a case of generalized dermatitis (fig. 1) which was proved by patch test to have been caused by wearing new pajamas. In this case patch tests performed at different times with the finish extracted from the fabric and applied to a piece of white gauze, and with the finish causing the dermatitis in Canada applied to white gauze, all produced marked reactions and an exacerbation of a generalized dermatitis (figs. 2 and 3). Subsequent investigation revealed that the pajamas were finished with the same finish that caused the dermatitis in Canada.

About the same time reports began coming in of dermatitis occurring among women wearing hosiery made from a new synthetic fiber substitute for silk. The first of these reports was received on May 1 and came in the form of a query from a hosiery mill in Indiana, asking for whatever information the Public Health Service had on this matter. It was told that the finish was suspected and was asked to give the trade name or composition of the finish which it used. Reports of cases of dermatitis from hosiery made of the new synthetic fiber were then received by the Public Health Service from the following sources. All requested whatever information the Public Health Service had as to the actual cause of the dermatitis and

TABLE 1.—Twenty-Seven Cases of Dermatitis

Finish, Pounds	Pattern	Total Pattern Complaints	Complaints by Colors		
			Blue	Brown	Green
80	6608	7	3	3	1
80	6741	2	..	..	2
80	6647	2	1	1	..
60	6126	2	..	..	2
60	6122	5	4	..	1
60	6124	1	1	..	..
60	6125	4	4	..	..
60	6123	2	1	1	..
60	6625	2	2	..	..
Totals.....		27	10	5	6

they were all told that the Office of Dermatoses Investigations was investigating the matter and that the results pointed to the finish on the hose as the actual irritant.

On June 22, Dr. Verne K. Harvey, director of the Indiana State Board of Health, reported thirty-eight cases.

On June 24, Dr. Adolph B. Loveman of Louisville, Ky., reported four cases.

On July 15, Dr. Frederick W. Birkman of New York reported one case.

On July 16, Dr. George Van Rhee of Detroit reported one case.

On July 22 Dr. S. J. Fanburg of Newark, N. J., reported four cases.

Investigations in Indiana, where the largest number of cases were reported, showed seventy-four known cases, of which number the authors actually saw sixty-four. In these cases the dermatitis began from two to twenty-eight days after the patient began wearing the stockings. The average case began two days after the stockings were worn. Some of the women wore the hose for only one or two days and then not again for two weeks. In these the dermatitis began within twenty-four hours after the hose were worn a second time. Sensitization in these cases was produced by previously wearing the hose.

The eruption usually began on the lower third and posterior aspect of the thighs as a small, brownish red papule around the hair follicle. It extended rapidly up the thighs to where the stocking ended and down

1. Schwartz, Louis, and Peck, Samuel: The Irritants in Adhesive Plaster, Pub. Health Rep. 50: S11-S19 (June 14) 1935, reprint 1690.

on the leg to the shoe top. In no case did it involve the foot. The pruritus was severe and the skin was erythematous, edematous and covered with brownish red macules and papules. Exposure to sunlight definitely aggravated the dermatitis and pruritus. When the wearing of the hosiery was discontinued, then under palliative, antipruritic treatment and sedatives the eruption faded and finally disappeared, but the pruritus persisted in some of the cases even after seven weeks. The follicles remained enlarged for a number of weeks after the eruption subsided.

Some of the patients developed urticarial and eczematous lesions on the trunk, arms, face, eyes and ears accompanied by such constitutional symptoms as headache, dizziness, elevated temperature, blurred vision, nausea and nervousness. Blood examinations made on

two of the patients showed no significant changes.

Patch tests performed in thirteen of these sixty-four cases with pieces of the hose which were worn gave positive reactions in forty-eight hours. On two of these patients patch tests were performed with the diluted finish used on the hose and in both of them the reactions obtained were severe and the sites of previous patch tests with the hose again became active and the subsiding dermatitis flared up. In addition to this, one of the patients developed a generalized erythema multiforme and the other developed pruritus of the right side of the face and complained of severe pain in her

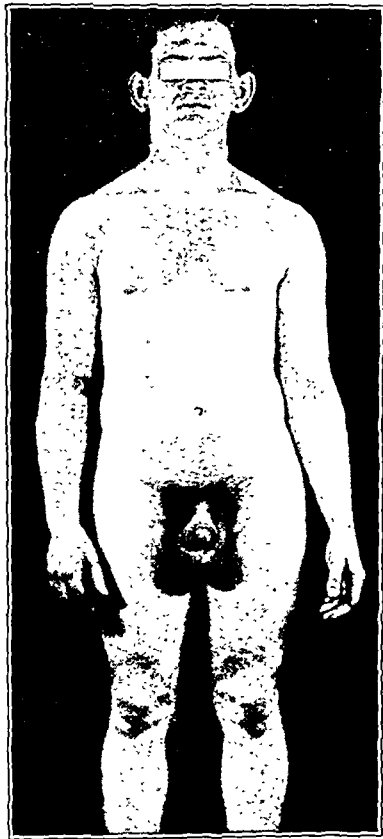


Fig. 1.—Dermatitis caused by finish on pajamas.

head and blurred vision. Examination of the eyes, however, revealed nothing pathologic. All the patients patch tested showed marked sensitivity to the adhesive plaster.

Some of the patients who had recovered again bought hose made of the new synthetic silk but having a different finish, and they have continued wearing them without ill effects.

It was suspected by the Public Health Service that this outbreak of dermatitis from wearing the hose was caused by the same finish which caused the dermatitis from wearing cotton fabrics, and the investigation to discover the actual cause of these cases was undertaken.

The factory where the new synthetic thread is made was visited and the manufacturing process studied. The new synthetic fiber is a polymer made from hexamethylenediamine and adipic acid. It enters the plant in the form of the monomer, a water white solution in

water. That the monomer is not a primary skin irritant is shown by the fact that the hands of one of us was immersed in it and allowed to dry, with no after-effects. The monomer is mixed with an inert delustering agent and an organic acid stabilizer and under heat and pressure is converted into the polymer. During the process of polymerization fugitive irritating compounds may be formed which appear for a short time in the unfinished fiber. They are said to disappear from the fiber during the remainder of the manufacturing process. The polymer, a milky white solid, is dried and cut into small chips. These chips are melted by heat and forced through minute openings to form a thread. The thread is cooled and solidified and a number of the fine threads are wetted with an emulsion and twisted into one thread. This emulsion consists of a vegetable oil, an organic solvent, a soap and an essential oil. There is only a fraction of 1 per cent by weight of the emulsion on the thread.

The thread is now stretched and twisted and then spooled. It is sold in this form but requires to be "thrown" before it can be used for knitting. Some of the thread is covered with a sizing consisting of a mixture of a polyvinyl compound and an innocuous hardening agent. It is then dried and oiled with a vegetable oil and wound on cones. These cones are sold to the hosiery mills and can be knitted without being "thrown."

The oil mixtures and sizing applied to the thread in the process of manufacture are supposedly removed in the hosiery mill by the "boil-off" operation. If the "boil-off" is imperfect, some of these oils and sizing may be left on the fiber and cause dermatitis in sensitive individuals.

It is a matter of record that, before the new synthetic fiber was put into large production, patch tests were performed with the unfinished thread on 200 people, with rayon and natural degummed silk as a control, and there were no greater number of positive reactions to the new synthetic fiber than to the control fabrics. In addition to this many thousand pairs of unfinished hose made of the new synthetic thread were given away for trial wear before it was placed on the market, and no cases of dermatitis occurred on the wearers. Samples of the new synthetic fiber in the various stages of manufacture were obtained at the factory for patch testing.

The state of Indiana, where the most cases of dermatitis were reported, was next visited. It was found that in all the confirmed cases of dermatitis hose manufactured in one mill had been worn. This was the mill which on May 1 reported the occurrence of cases to the Public Health Service. Chemical examination of thirty-six pairs of hose which had caused dermatitis on thirty patients showed that thirty-two pairs were made at this one mill and were all finished with the same finish. The other four pairs had been washed and there was not sufficient finish remaining on them to enable identification by chemical means.

The mill was visited and the manager interviewed. He stated that the manufacturers began making hosiery from the new synthetic fiber about one year ago and had sold many thousand dozen without receiving any complaints until April 1940. In April 1940 they began using a new finish and stated that they had sold about 1,000 dozen stockings finished with this product before they began to receive reports of dermatitis occurring from their hose. They then wrote to the Public Health

Service, and on receiving the reply stating that the finish should be suspected they stopped using it and succeeded in recalling from the retail stores about 300 dozen stockings. All the proved cases of dermatitis in Indiana were traced to stockings made in this one mill and



Fig. 2.—Patch test to finish taken off pajamas and applied to surgical aseptic gauze.

processed with the new finish. This finish proved to be the same as that which caused the dermatitis when used on cotton fabrics in Canada and elsewhere.

HOSIERY MANUFACTURING PROCESS

The cones of thread as brought from the new synthetic fiber factory are placed in knitting machines and knit into stocking legs. The thread as it comes off the cone passes through a lubricating emulsion before it is knit. The knit legs are taken to other machines, which knit and fasten the feet onto them. The thread in these machines passes through a similar emulsion to that used on the leg machines. The heels and toes are then looped together to close the foot. This is done on separate machines. The whole stocking is then seamed at the bottom of the foot and the back of the leg to form the closed stocking.

The stocking is then mounted on flat metal forms and placed in a chamber containing steam under pressure. This process, called "preboarding," softens the thermoplastic resin of which the thread is made and thus sets and shapes the hose. After the stockings come out of this steam chamber they are inspected for flaws by pulling and stretching over leg-shaped forms. They are then placed in cotton sacks, about four dozen to the sack, and taken to the dye house. The sacks are placed in metal drums and immersed and heated in about 50 gallons of a solution consisting of 2 per cent soap, 5 per cent wetting-out agent, 3 per cent trisodium phosphate (tetrasodium pyrophosphate may be used) and 10 per cent sulfonated castor oil containing dichlorethyl ether (the percentages given are on the weight of the stockings to be dyed). To this "boil-off" bath is also added the required amount of synthetic dyes to color the stockings. The dyes used are the same class as are used for acetate silk (acetamine and cellanthrene colors). The dyers state that the new synthetic fiber dyes better when the "boil-off" and the

dyeing is done in one operation, but as far as the dermatitis hazard to the wearer is concerned it would be preferable to make one operation of the "boil-off" and empty the drums of the "boil-off" liquor before the dyeing solution is put in. The spent "boil-off" liquor when discharged would then remove all the oils and sizing which are used on the thread in order to facilitate knitting. As it is, these oils and sizings in the dye bath are likely to remain on the thread with the dye and are potential skin irritants.

After the operation of scouring and dyeing, the drum is drained and the stockings are given three rinses of water, after which the drum is again emptied and the solution of the finish is poured into the drum and applied to the hose. The finish now used and which was used previous to April 1940 is essentially an emulsion of a compound of a methylmethacrylate resin.

After the finish is applied, the stockings are placed in a centrifugal and the water extracted. The damp hose from the centrifugal are placed on hot metal forms to give them final shape, a process known as "boarding."

No cases of occupational dermatitis occurred in this mill among any of the workers handling the hose up to the "boarding" process. However, while the finish which caused the dermatitis was being used on the hose, one girl working at the "boarding" operation where she came in contact with the hot, damp finished stockings contracted an occupational dermatitis of her hands and arms which promptly cleared up when she was transferred to another operation. After "boarding," the hose are inspected, paired and packed. Samples of hose before the "boil-off" and dyeing, samples after dyeing, and samples after the finishing were obtained for patch testing.

Inspections at four other hosiery mills showed no material differences in the manufacturing process except that the finish causing the dermatitis had never been used in these mills, and one of the mills "boiled-off" and dyed in separate operations. The officials of two of these mills stated that they had had no reports of dermatitis from their new synthetic fiber stockings despite the fact that during the past year they had sold

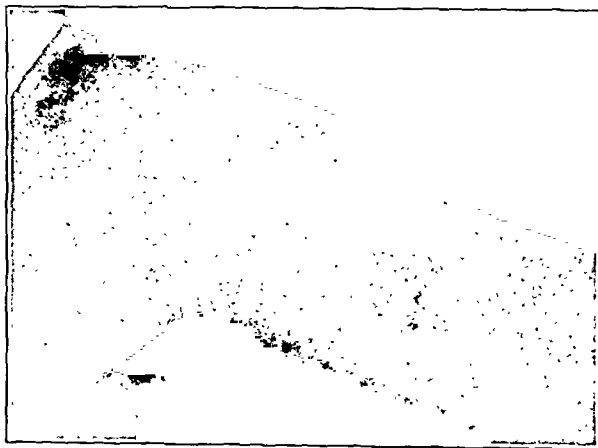


Fig. 3.—Patch test to finish C diluted with 10 parts of water and applied to aseptic white gauze. Note flare-up of eruption.

more than 50,000 dozen pairs. In the third mill it was stated that two cases of dermatitis were reported as occurring from their hose during the year that they had been making the new synthetic fiber hose. One of these patients was seen by us and stated that she had itching but no eruption after wearing the hose. Patch tests performed on this patient by us showed a slight

reaction to the hose in that stage of manufacture after it came out of the "boil-off" and dyeing operation, but there was no reaction to a patch of new hose finished with the old finish (case 5, table 2). This seems to confirm the fact that by "boiling-off" and dyeing in one operation some of the oils and sizings are left on the hose and may cause dermatitis. In the fourth mill, where the suspected finish was not used, we were told that they had heard of only one case of dermatitis suspected to have been caused by their new synthetic fiber hose, although in the past year they had sold more than 20,000 dozen.

In an effort to discover the actual irritant that caused the dermatitis from wearing the new synthetic fiber hose, patch tests were performed on nine patients who were said to have had dermatitis from wearing them and who volunteered for these tests. Four of these had been definitely proved by one of the authors to have had dermatitis from wearing hose finished with the suspected finish. The proof consisted in positive patch tests to the hose which they wore and from which they claimed to have contracted dermatitis. The fifth was the one cited who reacted to the hose after the "boil-off" and dyeing operation but did not react to new hose finished with the old formula. The four other patients were women working in the mill where the stockings causing the dermatitis were made and who stated that they had developed dermatitis from wearing them but who were treated by the nurse in the mill and not seen by a physician. All nine patients had recovered by the time these patches were applied.

The patches applied for forty-eight hours were as follows:

1. New synthetic thread, unoiled and unsized as obtained from the factory making it.

2. New synthetic thread on the cone, oiled and sized as sold by the factory making it.

3. New synthetic fiber stockings after "preboarding."

4. New synthetic fiber stockings after "boil-off and dye."

5. New synthetic fiber stockings after being finished with the old finish and "boarded."

6. A piece of scoured and dyed new synthetic fiber stockings dipped in a solution consisting of 1 part of finish A and 9 parts of water.

7. Scoured and dyed new synthetic fiber hose dipped in a solution of 1 part of finish B and 9 parts of water.

8. Scoured and dyed new synthetic fiber hose dipped in a solution of 1 part of finish C and 9 parts of water.

Finish A consisted of an emulsion of paraffin in a wetting-out agent. This finish has been used on natural silk hose for many years. Finish B consisted of an emulsion of a compounded methylmethacrylate resin. It is the old finish which was used on the hose before dermatitis occurred and is again being used on the new synthetic fiber. Finish C is the finish which was proved to have caused dermatitis when it was used on cotton and which was the finish used on the batch of hose causing the dermatitis. It is an emulsion of an acid ester gum. Table 2 shows the results of the patch tests.

It will be noted that all of the four subjects who were proved by patch tests to have had dermatitis from the hose reacted markedly to patch 8, the hose finished with finish C. One of the proved cases gave a lesser reaction to finish B than to finish C and another gave lesser reactions to the hose in stages 3 and 4 of its manufacture and to finish A.

One of the two among the five unproved subjects who reacted to finish C also reacted to the other finishes but to a lesser degree and she also reacted to patches

1 and 2. The other three subjects gave no reactions and hence their dermatitis was probably not caused by the hose.

The tests show that while sensitization may occur in some individuals to the new synthetic fiber itself, to the sizing and the oils on it (we know from other investigations that eugenol, the essential oil used in the emulsion, is a sensitizer), to the emulsion used in the knitting, to the mixture in the "boil-off" and dyeing solutions (this contains all the oils and sizings previously used on the thread as well as strong alkalis and dyes) and to the other finishes, yet all of the six patients who reacted to any of the finishes reacted most strongly to finish C. This is the finish that was used on the batch of hosiery to which the outbreak of dermatitis was traced and is the same finish which was proved to have caused the outbreak of dermatitis from cotton fabrics. Three of the six who reacted to the finish reacted only to finish C, and the other three reacted most strongly to

TABLE 2.—Results of Patch Tests

Patient	Patch								Comment
	1	2	3	4	5	6	7	8	
Proved									
1	—	?	—	—	—	?	+	+++	Marked reaction to adhesive plaster
2	—	—	—	—	—	—	—	+	Marked reaction to adhesive plaster
3	—	—	—	—	—	—	—	++	Marked reaction to adhesive plaster
4	—	—	+	+	—	+	—	++	Marked reaction to adhesive plaster
Unproved									
5	—	—	—	+	—	—	—	—	
6	?	—	—	—	—	—	—	+	Marked reaction to adhesive plaster
7	—	—	—	—	—	—	—	—	
8	+	+	—	—	+	+	+	++	Marked reaction to adhesive plaster
9	?	—	—	—	?	—	—	—	
Positive reactions	1	1	1	2	1	2	2	6	

finish C. All the six who reacted to finish C reacted strongly to adhesive plaster, which also contains abietic acid, which we believe to be the irritant ingredient in the ester gum contained in finish C actually causing the dermatitis. Hence it can be said that, while dermatitis may be caused in sensitive persons by any of the finishes and even by many natural fabrics like wool and silk, yet the major cause of the outbreak of dermatitis from hose and other wearing apparel described in this paper was the use of finish C. Those persons who developed dermatitis a few days after wearing the stockings were probably already sensitive to the resin in the finish (perhaps they acquired this sensitivity by previous contact with adhesive plaster), while those who developed dermatitis ten days or more after wearing the hose were sensitized by the resin in the finish.

As a result of these investigations this finish is no longer recommended by its manufacturers for use on wearing apparel.

Finishes are placed on fabrics in order to give them a better appearance, a better feel and better wearing properties, and to prevent runs and make them non-creasing and sometimes to hold the crease. Their stay

on the fabric is more or less temporary, for while part of the finish may remain after many washings the first laundering usually removes a large proportion of it. The fact that fabric finishes are often the causes of dermatitis when dyes are blamed was first proved by Schwartz.²

The sulfonated oils which were previously used as finishes have largely been supplanted by finishes made of various new synthetic resins. The urea formaldehyde resins, the alkyd resins, the methylmethacrylate resins and ester gums are used in modern finishes. Some of these resins are also used as vehicles for new types of fabric dyes. Recently fabrics have appeared on the market which are coated with resins containing antiseptics. These resins are often mixed with various plasticizers and stabilizers in order to give them the required properties necessary for use in wearing apparel. Resins are also used as plastic materials from which are manufactured such articles as belts, suspenders, wrist watch straps and garters.

Not only are the resins themselves capable of producing sensitization, but many of the plasticizers, stabilizers and antiseptics used in them are primary skin irritants as well as sensitizers.

Outbreaks of dermatitis caused by dyes, leather, rubber, plastics and fabrics in wearing apparel have often previously been reported. Manufacturers are placing materials containing new substances of unknown toxicologic properties on the market for wear before testing their action on the human skin. As a result there have been new outbreaks of dermatitis such as are described in this paper. Such outbreaks will continue to occur as long as this practice continues.

Therefore it is suggested that, before any new chemical or combination of chemicals is to be sold to the consumer for the purpose of wearing apparel or as a fabric finish or dye, the manufacturer should have toxicologic laboratories investigate the skin irritating and sensitizing properties of such new chemicals and make them known to their customers.

There should be standard tests for determining these facts. The following test is proposed: All new chemicals that may be used in wearing apparel should first be tested on susceptible animals (rabbits) to determine whether these chemicals are primary skin irritants. The test should consist in the application of the chemical to the shaved skin of a rabbit under a patch for twenty-four hours. Any irritation at the point of contact of the chemical with the skin is proof that the chemical is a primary skin irritant. If it is found that the chemical is not a primary skin irritant, it should be tested on animals for its sensitizing properties by applying it as a patch test for forty-eight hours ten days after the first series of patch tests. The manufacturer of the chemicals should make known to the customer the results of these tests.

Wearing apparel containing chemicals which have not been used before on fabrics should be first tested on ten or twelve persons to determine whether they are primary skin irritants or sensitizers. If it is found that the wearing apparel does not affect these people, a larger number (about 200) should be tested in the following manner: A piece of the new fabric should be applied in the form of a patch test for five days. As a control they should be patched at the same time with a fabric that has long previously been used for the pur-

pose for which this new fabric is intended and has not caused an unusual amount of dermatitis. The new fabric should not cause any more reaction than does the old. Ten days after the removal of the first patches a second series of patches should be applied to the same individuals and allowed to remain on for two days. This should give an idea of the percentage of people who can be sensitized by the new fabric as against the percentage that can be sensitized by the old.

Five days is suggested as the length of time for the application of the first patch tests to this large group of people, because any ordinary fabric that will not irritate the skin can safely be permitted to remain on the skin for that period and because the period of incubation for sensitization is usually six or more days. Hence, sensitization reactions should not result during the period that the first patch test is allowed to remain on the skin. Ten days is allowed after the removal of the first series of patch tests before the second series is applied in order to permit sensitization to develop.

If such a series of experiments show that a greater percentage are sensitized by the new fabric than by the old, then it is more hazardous and should if possible be modified in order to make it less so. Or if this is not possible it should be discarded as unsafe.

In addition to these precautions it should be required that dyes, finishes, plasticizers, stabilizers, antioxidants and accelerators used on wearing apparel should be of such a nature or so incorporated into materials that they will not come off or out of the material under the action of a normal amount of perspiration.

To assist manufacturers and better to protect the general public, it is suggested that the conclusions of such toxicologic laboratories should be submitted to the state department of health and labor of those states having industrial hygiene units, which in turn could call on the Office of Dermatoses Investigations whenever needed.

We believe that if these suggestions, or similar ones, were carried out, not only would the public be safeguarded from outbreaks of dermatitis such as here described, but the retailers would be saved the annual loss of large sums of money.

SUMMARY

Seemingly separate outbreaks of dermatitis in the United States and Canada caused by wearing apparel made of different fabrics were investigated and found to be due to a common cause.

A certain finish used on these fabrics was proved to be the cause. This finish is essentially an emulsion of an acid ester gum.

The acid ester gum was proved to be the chief irritant.

As a result of these investigations the finish was withdrawn by its manufacturers for use on wearing apparel.

RECOMMENDATIONS

Manufacturers of chemicals should have toxicologic and dermatologic tests performed on their chemicals and acquaint the buyers with the results.

Manufacturers of wearing apparel containing new chemicals should have studies made of the effect of these chemicals on the skin before placing them on sale to the public.

A method has been devised for performing such skin studies.

It is recommended that the buyer launder all new underwear, stockings and other garments that touch the skin, before wearing.

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HYPERTENSION AND CHRONIC
ATROPHIC PYELONEPHRITIS

RESULTS OF NEPHRECTOMY

NELSON W. BARKER, M.D.

AND

WALTMAN WALTERS, M.D.

ROCHESTER, MINN.

The experiments of Goldblatt¹ and others² who have shown that hypertension may be produced in dogs by partial constriction of the renal arteries by means of metal clamps have stimulated a more careful search for primary localized renal disease, particularly chronic pyelonephritis, in human beings with so-called essential hypertension. Although there is no evidence of chronic pyelonephritis in the majority of cases of essential hypertension, several investigators (Longcope,³ Butler⁴ and Weiss and Parker⁵) have felt that the association of these conditions was frequent enough to be more than incidental. Butler has reported a case in which hypertension was associated with unilateral chronic pyelonephritis in a child aged 7 years. Surgical removal of the affected kidney was followed by return of blood pressure to normal; the pressure had remained normal for twenty months at the time of Butler's report. Barney and Suby⁶ have reported a similar result of nephrec-

tomy was performed for chronic pyelonephritis or hydronephrosis associated with hypertension. The hypertension disappeared in all three cases; but in one case, in which there was disease in the remaining kidney, the hypertension recurred within a year. In a second case there was recurrence after the blood pressure had been normal for ten years. It also has been felt that localized vascular lesions of the kidney might be responsible for hypertension in rare instances. Leadbetter and Burkland⁸ have reported relief of hypertension in a Negro boy following removal of an ectopic kidney in which the main artery was partially occluded. Boyd and Lewis⁹ reported a similar effect after removal of a kidney containing multiple infarcts.

REPORT OF CASES

We report five cases of hypertension associated with unilateral chronic atrophic pyelonephritis in which nephrectomy resulted in return of the blood pressure to normal levels.

CASE 1 (A preliminary report has been published elsewhere¹⁰).—A man aged 42 came to the Mayo Clinic in November 1937. A large stone had been removed from his right ureter in 1933 elsewhere. At that time the kidney appeared to be of normal size in the urogram; in 1935 the kidney had been found to be moderately contracted; in 1937 it was markedly contracted. His blood pressure had been normal at numerous examinations prior to March 1936. In August 1937 his systolic

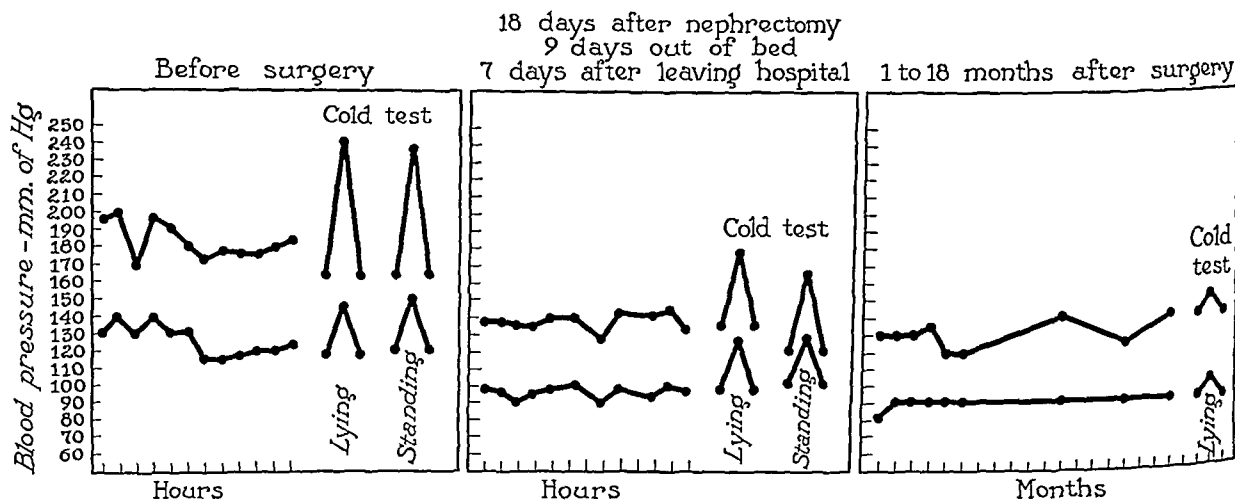


Fig. 1.—Hourly blood pressures taken with patient at rest, reactions to cold pressor test and follow-up studies in case 1 before and after nephrectomy.

tomy for unilateral chronic pyelonephritis in a case of hypertension in which the patient was 10 years of age. Crabtree⁷ has reported three cases in which nephrec-

tomies had been 200 mm. of mercury and the diastolic pressure 140. He stated that there was no known hypertension in his family.

In November 1937 the first blood pressure was 232 mm. systolic and 135 diastolic. Examination disclosed slight sclerosis and moderate narrowing of the retinal arteries and scattered small retinal hemorrhages. Retinal exudates and edema of the optic disks were not present. Chemical examination of the urine on several occasions did not disclose albumin or sugar, but microscopic examination showed hematuria grade 1 and pyuria grade 3. A roentgenogram of the thorax revealed that the transverse diameter of the heart was 11.5 cm. The electrocardiogram showed only left ventricular preponderance. The concentration of blood urea was 34 mg. per hundred cubic centimeters and that of serum sulfates 3.9 mg. per hundred

From the Division of Medicine (Dr. Barker) and the Division of Surgery (Dr. Walters), the Mayo Clinic.

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cubic centimeters. Excretory urography disclosed marked contraction and distortion of the right kidney and slight dilatation of its pelvis and calices but showed only moderate reduction of renal function (fig. 2). The left kidney appeared entirely normal. Ureteral catheterization revealed an impassable stricture in the upper part of the right ureter. Excretion of indigo



Fig. 2.—Excretory urogram in case 1, showing marked contraction of the right kidney.

carmin was grade 3 plus in the urine from the left kidney and grade 2 in the urine from the right kidney. A few leukocytes were found in the urine from the right kidney but none were found in that from the left kidney. Organisms were not obtained on culture of urine obtained by ureteral catheterization from either kidney, but *Escherichia coli*, micrococci and *Pseudomonas* were obtained from vesical urine.

The right kidney was removed Nov. 19, 1937; it was approximately a third of the normal size and weighed 48 Gm. (fig. 3). Its surface was nodular and contained numerous projections from a few millimeters to 1 cm. in diameter. The histologic picture was typical of chronic atrophic pyelonephritis. Slight dilatation of the pelvis and some thickening of the pelvic mucosa were present but there was no evidence of acute inflammatory reaction. Stones were not found. The cortex of the kidney consisted of alternate portions of normal renal tissue interspersed with portions of equal size in which the parenchyma had been destroyed almost completely and replaced by fibrous tissue containing numerous lymphocytes and fibroblasts. The arcuate and interlobular arteries in these portions had markedly thickened walls mostly as the result of intimal proliferation. Arteries with a lumen-to-wall ratio greater than 1:1 were not seen. In many of the arteries this ratio was reduced to 1:5 to 1:6 and the lumen of some of the arteries was completely obliterated (fig. 4).

The hourly readings of the blood pressure taken with the patient at rest and the responses of blood pressure to the cold pressor test before operation and eighteen days after operation are shown in figure 1. After the postoperative convalescence, roentgenograms of the heart and the electrocardiograms were unchanged. Examination of the ocular fundi disclosed only slight sclerosis and narrowing of the retinal arteries. The hemorrhages had disappeared.

Numerous determinations of the blood pressure were made during the next eighteen months. The average reading was 130 systolic, 90 diastolic and the maximal was 140 systolic, 100 diastolic, during this period. At the end of eighteen months the cold pressor test raised the blood pressure to only 150 systolic, 100 diastolic. At the end of two years the blood pressure was 130 systolic, 90 diastolic.

CASE 2.—A man aged 46 came to the clinic in February 1939; his chief complaint was headache of two months' duration. The headache had occurred chiefly when he awoke each morning

and at times had been very severe and had lasted all day. Acetylsalicylic acid had not relieved the headache and he had found it necessary to take codeine many times for relief. One week before the headaches had begun he had had painless hematuria. Cystoscopic examination at that time had revealed a stone in the right kidney. He had been a patient at the clinic in 1931 because of gastrojejunal ulcer, for which a gastric resection had been done. At that time his blood pressure had been 116 systolic, 90 diastolic and 120 systolic, 90 diastolic on two occasions. He stated that it had been taken several times at the recent cystoscopic examination and had been pronounced normal. He did not know of any instances of hypertension in his family.

Examination revealed that his blood pressure was 178 systolic, 118 diastolic. Examination of the retinal arteries showed narrowing grade 1 plus and sclerosis grade 1. There was no retinitis. No enlargement of the heart was noted on physical or roentgenographic examination. The maximal specific gravity of the urine was 1.025. Albuminuria and glycosuria were not present. A few erythrocytes and a moderate number of leukocytes were found in the urine. The concentration of urea was 20 mg. per hundred cubic centimeters of blood. Excretory urography showed the left kidney to be normal and to have normal function. The right kidney excreted the medium only slightly at the end of twenty minutes. It was small and atrophic and its pelvis was filled with a large branched stone (fig. 5).

The right kidney was removed Feb. 21, 1939; it weighed only 70 Gm. and contained a stag-horn calculus which filled its pelvis. It was estimated that 50 per cent of the renal parenchyma had been destroyed by irregular pyelonephritic scarring. There was marked thickening of the walls of all arteries and arterioles in the scarred regions. The lumen-to-wall ratio varied from 1:2 and 1:5 (fig. 6).

The blood pressure readings determined hourly before and after operation and the response of the blood pressure to the cold test are shown in figure 7. When the patient was seen in



Fig. 3.—Appearance of right kidney in case 1, showing marked irregularity and scarring of the cortex and increase in the peripelvic fat.

the office six months after the operation his blood pressure was 120 systolic, 85 diastolic. He said that he had not had any headache since the operation.

CASE 3.—A married woman aged 34, who never had been pregnant, came to the clinic complaining of left renal colic which had occurred once or twice a year for ten years. To her knowledge she had not passed stones or had hematuria, chills or fever with the attacks. For a year and a half before

she came to the clinic she had had dull frontal headache about once a month. Her blood pressure had been found to be normal at examinations ten and four years previously. She did not know of any members of her family who had had hypertension.

Examination revealed moderate spasm and tortuosity of the retinal arteries with slight sclerosis. There was no evidence of retinitis or demonstrable enlargement of the heart. Pelvic

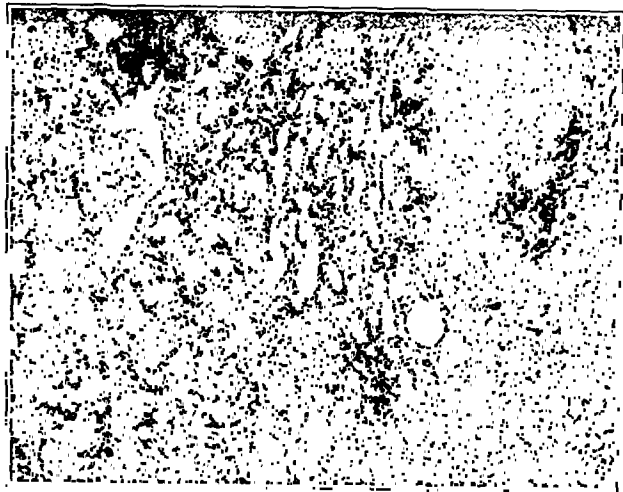


Fig. 4.—Section of kidney in case 1 showing marked destruction of the renal parenchyma with replacement by chronic inflammatory tissue, and marked thickening of the walls of the arteries and reduction in the size of their lumens; slightly reduced from a photomicrograph with a magnification of 50 diameters.

examination disclosed a movable firm tumor which extended 10 cm. above the symphysis pubis. This was believed to be a fibromyoma of the uterus.

Examination of the urine showed albuminuria grade 2 on a basis of 1 to 4; otherwise, the urine was normal. A roentgenogram of the thorax and an electrocardiogram did not reveal anything abnormal. The concentration of blood urea was 30 mg. per hundred cubic centimeters. Intravenous urography revealed a functionless left kidney and slight pyelectasis and caliectasis of the right kidney, which was functioning normally and was normal in size. Retrograde pyelography revealed a markedly contracted left kidney with a medially displaced pelvis.

The blood pressure on admission was 200 systolic, 126 diastolic. When taken hourly during a period of rest in the hospital it varied between 195 systolic, 125 diastolic and 160 systolic, 105 diastolic. The maximal response of the blood pressure to the cold pressor test was 190 systolic, 150 diastolic and the minimal blood pressure after anesthesia with pentothal sodium administered intravenously was 130 systolic, 95 diastolic.

The left kidney was removed. Twelve days later the blood pressure varied between 120 systolic, 85 diastolic, and 110 systolic, 75 diastolic, and on dismissal eighteen days after operation it was 130 systolic, 90 diastolic.

When the patient was reexamined one year later she had no complaints. Her blood pressure varied between 130 systolic, 100 diastolic and 125 systolic, 85 diastolic, and urinalysis did not reveal any abnormality. The concentration of blood urea was 38 mg. per hundred cubic centimeters and there was no spasm of the retinal arteries.

The left kidney weighed 18 Gm. (fig. 8). There was very little normal renal parenchyma remaining and for the most part the tissue consisted of extensive scars with remnants of destroyed tubules and hyalinized glomeruli. The arteries and arterioles in the scarred regions showed marked thickening of the wall and reduction of the lumen as the result of intimal proliferation in most instances.

CASE 4.—A housewife aged 52 came to the clinic because of persistent dull pain in the right side of the upper part of the abdomen. The pain had been associated with lumbar backache and had been present for two months. The patient had not menstruated for ten years. She had had severe periodic headaches for more than thirty years. Two months prior to coming to the clinic she had been told that her blood pressure was

elevated. It had not been taken previously to this time. She stated that one sister had high blood pressure.

Examination revealed moderate narrowing and slight but definite sclerosis of the retinal arteries without retinitis. Examination of a specimen of urine which was obtained by catheterization revealed a trace of albumin and numerous pus corpuscles. The concentration of blood urea was 24 mg. per hundred cubic centimeters. Roentgenologic examination of the thorax revealed that the transverse diameter of the heart was 11.5 cm. Intravenous urography revealed an apparently normal left kidney and a functionless right kidney. Cystoscopic examination revealed pus coming from the right ureter and an impassable obstruction 2 to 3 cm. from the ureterovesical juncture. Culture of the vesical urine produced *Escherichia coli*. When the patient was first examined at the clinic her blood pressure was 186 systolic, 110 diastolic.

The right kidney was removed. Following the operation the blood pressure rapidly fell to 125 systolic, 70 diastolic. When the patient returned for a checkup ten months later her blood pressure was 125 systolic, 85 diastolic. At a second checkup thirteen months after operation her blood pressure was 128 systolic, 90 diastolic. The kidney weighed 52 Gm. Approximately 90 per cent of the renal parenchyma had been destroyed and replaced by chronic inflammatory fibrous tissue. In the involved regions there was marked thickening of the arteriolar walls, which was chiefly the result of proliferation of the intima.

The following case is presented only as a preliminary report, as insufficient time has elapsed since nephrectomy was done to permit of proper evaluation. However, since malignant hypertension with severe retinitis and edema of the optic disks is uncommon among children and since a return of blood pressure to normal with involution of the retinitis followed nephrectomy, a preliminary report of this case seems justified.

CASE 5.—A girl aged 7 years was brought to the clinic by her mother because of headaches. She had had occasional headaches since the age of 2 years, but these had increased

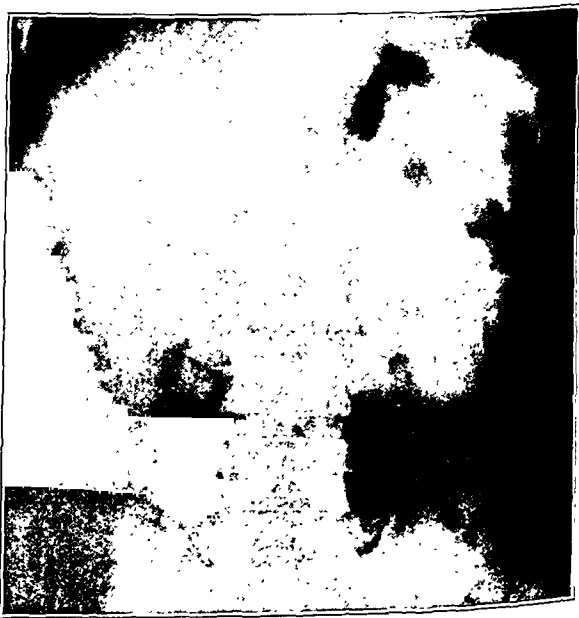


Fig. 5.—Excretory urogram in case 2, showing marked contraction of the right kidney.

markedly in frequency and severity during the past nine months and particularly during the past three months. Nine months previously she had had measles of severe degree. At that time albumin had been found in the urine and her systolic blood pressure had been found to be 180 mm. For the past five weeks her mother had noticed that the right eye turned inward.

Examination of the eyes showed definite weakness of the right external rectus muscle, marked spasm of the retinal

arteries, extensive retinal exudates and hemorrhages, and edema of the optic disks measuring from 5 to 6 diopters in both eyes. Her heart was definitely enlarged. Urinalysis showed albuminuria grade 2 on the basis of 1 to 4 but the urine was otherwise normal. Roentgenologic examination of the thorax showed apparent dilatation and torsion of the arch of the aorta with prominence of the aortic knob along the left border of the mediastinum. Normal pulsations were present in the arteries of the lower extremities. Her blood pressure on admission was 210 systolic, 160 diastolic. During a period of rest in the hospital the blood pressure varied between 210 systolic, 166 diastolic, and 170 systolic, 140 diastolic. The mean pressure was 207 systolic, 147 diastolic. The cold pressor test increased the blood pressure to 234 systolic, 176 diastolic. No history could be obtained which suggested any localized renal disease but an excretory urogram showed no evidence of secretion from the left kidney. A retrograde pyelogram showed that the left kidney was very small and had abbreviated clubbed calices. The right kidney appeared to be normal in the urograms and its function was normal. The left kidney was removed. The kidney was very small, weighing only 9 Gm. The pelvis was somewhat dilated and there was an anomalous artery crossing the ureteropelvic juncture. Microscopic examination showed marked destruction of the tubules throughout most of the kidney substance and hyalinization of almost all the glomeruli. There

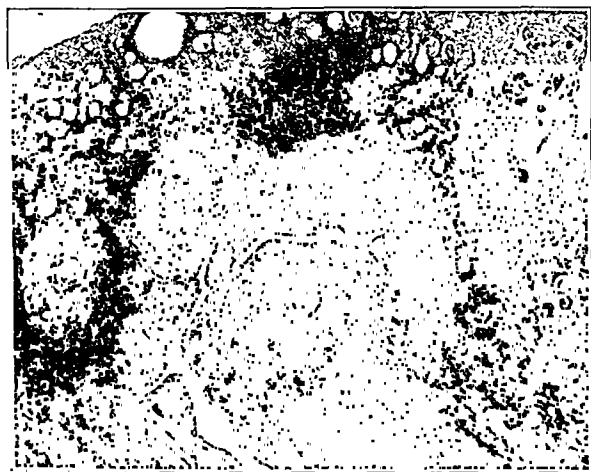


Fig. 6.—Section of kidney in case 2, showing marked destruction of the renal parenchyma with replacement by chronic inflammatory tissue and marked thickening of the walls of the arteries and reduction in the size of their lumens; slightly reduced from a photomicrograph with a magnification of 40 diameters.

was extreme thickening of the walls of the blood vessels, the lumens of which were practically obliterated in many instances. The patient's postoperative convalescence was uneventful. Her blood pressure gradually fell until on the sixth postoperative day it was 130 systolic, 104 diastolic. From the eleventh to the twentieth postoperative day it varied between 100 systolic, 88 diastolic, and 120 systolic, 90 diastolic. The cold pressor test on the twentieth postoperative day showed that the maximal blood pressure was 140 systolic, 104 diastolic. Examination of the retinas on this day also showed a few absorbing exudates but no hemorrhages. There was no arterial spasm and there was a marked reduction in the edema of the optic disks to 2 diopters. The weakness of the right external rectus muscle had entirely disappeared.

At a checkup three months after nephrectomy her blood pressure varied between 102 systolic, 70 diastolic and 122 systolic, 84 diastolic and did not rise at all during the cold pressor test. There was no edema of the optic disks but a few residual exudates were present in the retinas. Follow-up studies of this patient will be reported at a later date.

COMMENT

It is our opinion that in these five cases the return of the blood pressure to normal levels and its persistence at normal levels following nephrectomy is ample evidence that the diseased kidney was the chief factor in

the production of the hypertension. In the first three cases it can be said with reasonable certainty that the renal disease was advanced when the hypertension first developed. In the fourth and fifth cases it is not known definitely when either the hypertension or the renal disease began.

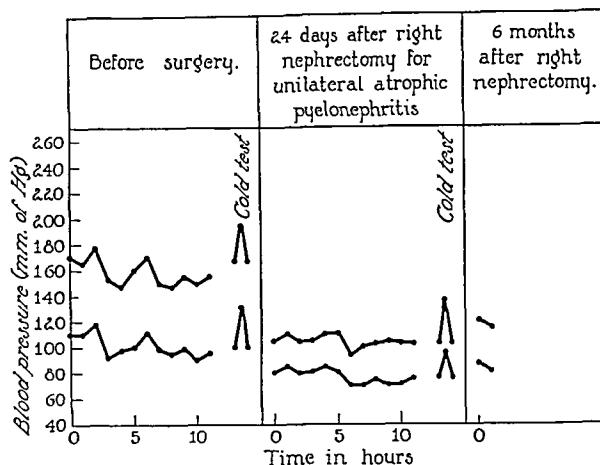


Fig. 7.—Hourly blood pressure taken at rest, reactions to cold pressor test and follow-up studies in case 2 before and after nephrectomy.

With regard to the hypertension, certain common characteristics were noted in all of the cases. None of the patients had evidence of advanced organic arterial damage, and in those cases (cases 1, 2 and 3) in which there were some data regarding the duration of the hypertension it had not existed for a long period. All



Fig. 8.—Kidney in case 3, showing marked atrophy of the parenchyma, pyelectasis and caliectasis.

the patients had relatively high diastolic blood pressures compared with the systolic.

With regard to the renal disease, all had contracted atrophic kidneys weighing less than 75 Gm. (that is, less than half the normal weight), all had extensive chronic pyelonephritis with destruction of renal parenchyma and all had marked thickening of the arterial walls in the scarred regions.

Similar observations were made in one of the cases reported by Butler. In their study of pyelonephritis and hypertension, Weiss and Parker stated that a mild degree of hyperplastic arteriolar sclerosis in both kidneys is usually associated with normal blood pressure, a severe degree of hyperplastic arteriolar sclerosis in unilateral pyelonephritis may or may not be associated with hypertension, and a severe degree of hyperplastic arteriolar sclerosis in both kidneys is practically always associated with severe hypertension.

In the five cases which we have reported, the cause of the marked thickening of the renal arteries has not been determined. The arteries in the regions in which the renal parenchyma was well preserved appeared to be normal. The thickening was not confined to the

nation disclosed that twenty-six (45.6 per cent) of the patients had a blood pressure greater than 145 systolic, 90 diastolic.

We next studied a consecutive series of twenty-four cases in which pathologic examination of a kidney that was removed at operation revealed the presence of chronic atrophic pyelonephritis and a kidney that weighed less than 75 Gm.

The blood pressures in these cases were reviewed and careful pathologic studies of the kidneys were made. A summary of the data is given in the accompanying table. The first five cases are those which we have reported in detail.

It will be noted that the blood pressures in excess of 145 systolic, 90 diastolic, were found in fifteen, or 62.5 per cent, of the cases and that the first eleven (45.8 per cent) can be said to have had a definite hypertension. We have no follow-up data at the present time on the effect of nephrectomy on the blood pressure in cases 6, 7, 8 and 9. In cases 10 and 11 the blood pressures a year after operation were 130 systolic, 110 diastolic, and 145 systolic, 80 diastolic, respectively, but in each case an extensive sympathectomy was done at the time of nephrectomy, so that we cannot say that the lowering of the blood pressure was the result of nephrectomy alone.

It is also noteworthy that in all of the cases with definite hypertension there was marked thickening of the arteries in the scarred regions of the kidneys but that only moderate thickening of these arteries was found in four of the nine cases in which the blood pressure was normal. In the other five cases in which the blood pressure was normal there was marked thickening of the arteries, but in two of the cases there was also extensive suppuration of the kidneys (pyonephrosis) and the other three patients were relatively young individuals as compared with the patients who had definite hypertension.

It must be emphasized again that localized renal lesions are not commonly found in cases of so-called essential hypertension. Thus, in 100 cases of hypertension in which blood pressure studies were conducted in the hospital and in which urograms had been made, chronic atrophic pyelonephritis was found in only four. Further urographic studies in a large series of cases of hypertension and studies of the effect of nephrectomy for other types of renal lesion as well as chronic atrophic pyelonephritis are advisable.

SUMMARY

This paper is based on five cases of unilateral chronic atrophic pyelonephritis associated with hypertension. In each case the blood pressure returned to normal after nephrectomy and it has remained within normal limits for a number of months in four cases. Insufficient time has elapsed to evaluate thoroughly the fifth case. In each case pathologic studies revealed extensive atrophy and scarring of the diseased kidney with marked thickening of the walls of arteries in the scarred portions.

In twenty-six, or 45.6 per cent, of a series of fifty-seven cases in which a diagnosis of chronic atrophic pyelonephritis was made urographically there was an elevation of blood pressure. In a series of twenty-four cases in which chronic atrophic pyelonephritis was diagnosed pathologically after nephrectomy fifteen, or 62.5 per cent, showed an elevated blood pressure and eleven, or 45.8 per cent, definite hypertension.

There is evidence to believe that the hypertension is the result of obstruction of the renal arteries.

Blood Pressure When Patients Were First Observed at the Clinic and Pathologic Changes in Cases of Unilateral Chronic Atrophic Pyelonephritis in Which Nephrectomy Was Performed

Case	Age, Yrs.; Sex	Blood Pressure, Mm. of Mercury	Weight of Kidney, Gm.	Renal Lesions and Percentage of Renal Parenchyma Involved by Scar Tissue	Thickening of Arterial Walls, Grade*
1	42, ♂	232/135	78	Nodular chronic pyelonephritis; 50%	3+
2	46, ♂	178/118	40	Nodular chronic pyelonephritis; large stone; 50%.....	3+
3	34, ♀	200/126	18	Diffuse chronic pyelonephritis; very little normal parenchyma.....	3+
4	52, ♀	186/110	52	Chronic nodular pyelonephritis; thickened parenchyma; 60%.....	4
5	7, ♀	210/ 66	9	Diffuse chronic pyelonephritis; many hyaline glomeruli.....	3
6	44, ♀	200/130	50	Granular chronic pyelonephritis; 60%	3+
7	43, ♀	170/112	30	Nodular chronic pyelonephritis; 60%	3+
8	57, ♂	184/112	50	Nodular chronic pyelonephritis; 30%	3+
9	47, ♀	170/100	70	Nodular chronic pyelonephritis; 40%	3+
10	39, ♀	250/140	60	Nodular chronic pyelonephritis; 50%	3+
11	36, ♀	220/130	20	Diffuse chronic pyelonephritis.....	3+
12	47, ♂	152/102	70	Nodular chronic pyelonephritis; 20%	3
13	37, ♀	160/ 88	70	Nodular chronic pyelonephritis; 10%	1+
14	48, ♀	162/ 88	48	Nodular chronic pyelonephritis; 50%	3+
15	49, ♀	155/ 90	60	Nodular chronic pyelonephritis; 40%	3+
16	26, ♀	125/ 90	42	Small hydronephrotic sac with diffuse chronic pyelonephritis.....	3
17	21, ♀	128/ 92	44	Nodular chronic pyelonephritis; 50%	3+
18	10, ♀	100/ 50	25	Nodular chronic pyelonephritis; 50%	3
19	39, ♀	130/ 90	63	Chronic pyelonephritis with pyonephrosis.....	3
20	50, ♂	110/ 74	52	Chronic pyelonephritis with pyonephrosis.....	3
21	41, ♂	124/ 86	70	Small hydronephrosis with a few scars.....	2
22	25, ♂	104/ 70	49	Small hydronephrotic sac with chronic pyelonephritis.....	2
23	52, ♀	118/ 74	45	Nodular chronic pyelonephritis; 40%	2
24	44, ♂	110/ 70	48	Nodular chronic and subacute pyelonephritis; 40%.....	2

* Basis of 1 to 4.

arterioles but was also seen in the interlobular and arcuate arteries. It was partly due to increased thickening of the muscular coat and partly to extensive hyperplasia of the intima. There are three possibilities: (1) The arteries may be thickened as the result of arteritis which is part of the chronic inflammatory reaction in the renal parenchyma, (2) they may be thickened as the result of contraction by the scar tissue, and (3) they may be thickened because of more distal obstruction to the capillaries associated with the destruction of the renal parenchyma. As the scarred regions containing the thickened arteries comprised a large portion of the renal tissue in each case, there can be no doubt that in each case there was considerable obstruction to the renal arterial blood flow.

Because of the similarity of the renal lesions in the five cases it was thought advisable to study the incidence of hypertension in a larger series of cases of chronic atrophic pyelonephritis. A review of a consecutive series of fifty-seven cases in which a diagnosis of chronic atrophic pyelonephritis was made by urographic exami-

TREATMENT OF PNEUMOCOCCIC
MENINGITIS

PAUL S. RHOADS, M.D.

ARCHIBALD L. HOYNE, M.D.

BENJAMIN LEVIN, M.D.

CHICAGO

RICHARD G. HORSWELL, M.D.

BOSTON

WILLIAM H. REALS, M.D.

AND

WAYNE W. FOX, M.D.

CHICAGO

Although the newer chemotherapeutic agents have not changed the outlook in pneumococcic meningitis as strikingly as in streptococcic meningitis, their use, together with specific serum, has made the prognosis much more hopeful in this highly fatal disease. In the past three years there have been several reports of small groups of cases or single cases in which recovery appears to have resulted from these agents, used alone or in combination.¹

Prior to July 1938 only one of us had observed a recovery in pneumococcic meningitis. Between 1912 and 1937 there had been two recoveries at Cook County Contagious Hospital. Perusal of the medical literature confirmed the impression that prior to 1937 this disease had been almost invariably fatal.²

From July 1, 1938, to Feb. 1, 1940, we treated twenty-two patients, seven of whom recovered. Only the cases in which recovery occurred are described in

detail in this communication, but to determine the relative frequency a survey was made of all cases of pneumococcic meningitis at the Cook County Hospital from Jan. 1, 1937, to Feb. 1, 1940. To our surprise there were seventy-one cases during this period. Among all the cases of meningitis at the Cook County Hospital, only tubercle bacilli and meningococci were ahead of pneumococci numerically as etiologic agents (table 1).

Surprisingly, during the twenty month period in which our twenty-two cases occurred, there were altogether thirty-eight cases of pneumococcic meningitis in the hospital, while only thirteen cases of meningococcic meningitis were admitted. Obviously the old teaching that all patients with purulent meningitis should be treated as having meningococcic meningitis until proved otherwise is entirely obsolete. Now it is best to start sulfapyridine or its sodium salt when in doubt, unless there are unusual contraindications. Every effort must be made to establish an etiologic diagnosis quickly so that other proper specific measures may be used. Six times among the thirty-three patients treated prior to our series antimeningococcus serum was given to patients with pneumococcic meningitis under a mistaken diagnosis. In our own series of fatal cases, one patient had been treated in this way prior to the time he came to us, and we mistakenly treated the patient for meningococcic meningitis for two days before the etiologic agent was determined.

Table 2, giving the results of a survey of all cases of pneumococcic meningitis in a three year period at the Cook County Hospital, shows the wide variety of pneumococcus types responsible for meningitis. In the cases reviewed (table 3), it is seen that pneumococcic meningitis, unassociated with other lesions, i. e. "primary," is relatively uncommon. Pneumonia, both confluent lobular and lobar, was the lesion most frequently associated with pneumococcic meningitis. Usually this preceded the meningitis but was in some instances undoubtedly a sequel. Otitis media was the next most common associated pathologic change and when present was usually the atrium of infection, although in four cases both otitis media and pneumonia were present. Four cases of pneumococcic meningitis occurred in persons with old healed skull fractures. It is doubtful whether there was any etiologic relationship in these cases, but in the three cases associated with recent skull fractures the atrium of infection may have been the torn dura.

We have been impressed with the studies of Osgood,³ Branham and Rosenthal,⁴ Gross and his associates,⁵ and others in which more and more evidence has been adduced that the therapeutic efficacy of specific antibody, as well as of sulfanilamide or of sulfapyridine, was enhanced by the use of the two simultaneously. In their studies this action was beyond that which would be expected from the simple additive effect of the two. Hence our plan was to use both sulfapyridine and specific antiserum if the type of pneumococcus could be obtained quickly and serum could be obtained.

The protocols reveal that sulfanilamide was used in our earlier cases, then sulfapyridine and later the sodium salt of sulfapyridine. The Lederle Laboratories

From the Cook County Contagious Hospital.

1. In addition to the references given in footnote 2, these reports include the following:

- Query, R. Z.: Pneumococcus Type VII Meningitis Treated with Sulfanilamide and Specific Serum, with Recovery, *J. A. M. A.* **111**: 1373 (Oct. 8) 1938.
Mertins, P. S., and Mertins, P. S., Jr.: Meningitis Due to the Type IV Pneumococcus with Recovery: Report of a Case, *Arch. Otolaryng.* **25**: 657 (June) 1937.
Latto, Conrad: Pneumococcic Meningitis Treated with Prontosil, *Brit. M. J.* **1**: 566 (March 12) 1938.
Young, Freida: Pneumococcic Meningitis Treated with Sulfanilamide: Recovery, *Brit. M. J.* **2**: 286 (Aug. 6) 1938.
Allen, W. B., Mayer, S., and Williams, R.: Pneumococcic Meningitis with Recovery: A Report of Three Cases, *Am. J. M. Sc.* **196**: 99 (July) 1938.
Robertson, Kenneth: Case of Pneumococcic Meningitis Treated with M. & B. 693, *Lancet* **2**: 728 (Sept. 24) 1938.
Reid, G. C. K., and Dyke, S. C.: Pneumococcic Meningitis Treated with M. & B. 693: Recovery, *Lancet* **2**: 619 (Sept. 10) 1938.
Cunningham, A. A.: Pneumococcic Meningitis Treated with Sulfanilamide and M. & B. 693, *Lancet* **2**: 1114 (Nov. 12) 1938.
Sadock, J. F., Jr.: Observations on Sulfanilamide Therapy in Pneumonia and Meningitis Due to Type III Pneumococci, *New England J. Med.* **219**: 787 (Nov. 17) 1938.
Garfin, S. W.: Meningitis (Otitis) Due to Type III Pneumococcus: Operation, Sulfanilamide and Intraspinal Injection of Patient's Own Serum; Recovery, *Laryngoscope* **48**: 797 (Nov.) 1938.
Magruder, R. G., and Nichols, D. O.: Report of a Case of Type III Meningitis with Recovery, in Which Sulfanilamide was Used, *Arch. Otolaryng.* **29**: 371 (Feb.) 1939.
Cutts, Morgan; Gregory, K. K., and West, E. J.: Pneumococcic Meningitis Successfully Treated with Sulfapyridine, *J. A. M. A.* **112**: 1456 (April 15) 1939.
MacKeith, R. C., and Oppenheimer, G.: Pneumococcic Meningitis: Report on Five Consecutive Cases Treated with Sulfanilamide Pyridine (M. & B. 693), *Lancet* **1**: 1099 (May 13) 1939.
Stein, J. L., and Steiner, M. M.: Meningitis Caused by Pneumococcus Type III: Observations on Sulfanilamide Therapy, *Am. J. Dis. Child.* **58**: 274 (Aug.) 1939.
Hodes, H. L., Gimbel, H. S., and Barnett, G. W.: Treatment of Pneumococcic Meningitis with Sulfapyridine and the Sodium Salt of Sulfapyridine, *J. A. M. A.* **113**: 1614 (Oct. 28) 1939.
Sappington, S. W., and Favorite, G. O.: Sulfanilamide and Meningitis, *Ann. Int. Med.* **13**: 576 (Oct.) 1939.
Marriott, H. L.: Sulfapyridine (M. & B. 693) and Pneumococcic Infections, *Brit. M. J.* **2**: 944 (Nov. 11) 1939.

2. Neal, Josephine B.: Treatment of Infections of the Central Nervous System with Sulfanilamide, *J. A. M. A.* **111**: 1353 (Oct. 8) 1938.
Eley, R. C., in discussion on Dr. Neal's paper. Finland, Maxwell; Brown, J. W., and Rauh, A. T.: Treatment of Pneumococcic Meningitis, *New England J. Med.* **218**: 1033 (June 23) 1938.
Tripoli, C. J.: Bacterial Meningitis: Comparative Study of Various Therapeutic Measures, *J. A. M. A.* **106**: 171 (Jan. 18) 1936.

3. Osgood, E. E.: Culture of Human Marrow: Studies on Mode of Action of Sulfanilamide, *J. A. M. A.* **110**: 349 (Jan. 28) 1938.

4. Branham, S. E., and Rosenthal, S. M.: Studies in Chemotherapy: V. Sulfanilamide, Serum and Combined Drug and Serum Therapy in Experimental Meningococcic and Pneumococcic Infections in Mice, *Publ. Health Rep.* **52**: 685 (May 28) 1937.

5. Gross, Paul; Cooper, F. B.; and Lewis, Marion: The Chemotherapy of Experimental Type II Pneumococcic Meningitis, *Am. J. M. Sc.* **197**: 609 (May) 1939.

furnished us with the serum, and for eight patients in our series sulfapyridine was given to us by Merck & Co., Inc.

Although frequent determinations of the blood level of sulfanilamide and of sulfapyridine were not made in our earlier cases, the value of this check soon

TABLE 1.—Relative Frequency of Pneumococcic Meningitis as Compared with Other Types of Meningitis in Admissions to the Cook County Hospital from Jan. 1, 1937, to Feb. 1, 1940

Types	Cases
Tuberculous	158
Meningococci	105
Pneumococci	71
Streptococci	36
Influenzal	29
Lymphocytic	18
Streptococci	6
	3
	33

became apparent. As pointed out by other workers, the spinal fluid concentration of these drugs seldom exceeds more than one half to two thirds the blood concentration in persons under treatment. Hence a blood level of from 15 to 20 mg. per hundred cubic centimeters is desirable. In practically every case there was marked cyanosis after sulfanilamide or sulfapyridine was started, but this was not considered an indication for stopping the drugs. In some of the sulfanilamide-treated cases secondary anemia supervened but was treated by blood transfusion rather than by withdrawal of the drug. No noticeable effect on the blood was observed with the use of sulfapyridine. In our small series of sulfapyridine-treated cases hematuria did not occur. There were no instances of anaphylactic shock. In a few instances the sharp thermal reaction so often produced by rabbit serum occurred. It always responded promptly to intravenous administration of calcium, and in no case was it necessary to discontinue intravenous serum.

TABLE 2.—Distribution of Types in the Forty-Two Cases of Pneumococcic Meningitis That Were Typed

Type	Recoveries	Deaths
I.....	1	1
II.....	..	2
III.....	..	4
IV.....	1	0
V.....	..	2
VI.....	1	4
VII.....	..	4
VIII.....	..	2
IX.....	..	1
X.....	1	1
XI.....	..	1
XII.....	..	1
XIII.....	1	0
XIV.....	1	6
XV.....	1	1
XVI.....	..	1
XVII.....	1	3
XVIII.....	1	1
XIX.....	..	1
XX.....	1	0

PROTOCOLS OF CASES IN WHICH RECOVERY OCCURRED

CASE 1.—A Negro youth aged 15 had the usual signs of meningeal irritation when admitted on the eighth day of his illness but he was still conscious. There was slight infection of the right ear drum and he had a moderately inflamed throat. Type I pneumococci were found in cultures of the blood and spinal fluid but not in direct smears—a favorable prognostic sign. Recovery occurred after vigorous dosage with sulfanilamide and specific antiserum.

CASE 2.—A Negro girl aged 15 years was admitted on the third day after the onset of headache and pain in the left ear. The drum was incised at once and green pus escaped. Because

of a delay in typing the organism only sulfanilamide in large doses subcutaneously was given the first two days. After type XVII pneumococci were identified in the spinal fluid and blood, 80,000 units of specific rabbit serum was injected intravenously. Sulfanilamide was continued by mouth. Additional serum was given until a total of 340,000 units had been administered. This case illustrates the necessity of establishing drainage in all purulent lesions due to pneumococci, in addition to chemotherapy and serum therapy.

CASE 3.—A white girl aged 8 years was admitted because of stiff neck, fever and frequent convulsions of one day's duration. Examination revealed nothing noteworthy beyond the usual signs of meningeal irritation. In the spinal fluid the cell count was 7,900. No organisms were seen on direct smear, but the next day a growth of type VI pneumococci was obtained. Small doses of sulfanilamide were given on the second and fourth hospital days, but it was not given in consecutive doses each day until the sixth day of hospitalization. Type specific serum was started on the second hospital day and continued at frequent intervals through the eighteenth day. After fourteen days the temperature became normal and remained so until the twenty-eighth day, at which time there was some evidence of

TABLE 3.—Data on All Cases of Pneumococcic Meningitis from Jan. 1, 1937, to Feb. 1, 1940

Distribution by Ages									
Under 1 Year	1-5 Years	5-10 Years	10-20 Years	20-30 Years	30-40 Years	40-50 Years	50-60 Years	Over 60 Years	Total
8	5	9	8	7	5	15	9	5	71
Other Pathologic Changes Encountered in Forty-Nine Cases of Pneumococcic Meningitis *									
Times					Times				
Otitis media.....	24	Old healed otitis media.....				1			
Pneumonia (lobar or bronchial).....	27	.....				3			
Vegetative endocarditis.....	5	.....				1			
Fibrinous pleuritis.....	2	.....				1			
Fibrous pleuritis.....	1	.....				1			
Thrombosis, right leg.....	1	.....				1			
Pneumococcic peritonitis.....	1	.....				6			
Patients who came to autopsy.....									
Patients well enough studied that conclusions as to accompanying pathologic changes could be drawn.....									
Cases not included because the clinical data is inadequate.....									

* The twenty-two cases treated by the authors and described elsewhere in detail are included.

fluid in the right side of the chest. X-ray examination revealed only a thickened pleura. A diagnostic thoracentesis was not done. The temperature returned to normal in four days.

In this case, as in others, the absence of large numbers of pneumococci in direct smears, together with a relatively high spinal fluid cell count, proved a favorable prognostic sign. The presence of an associated lesion in the chest, plus the inadequate dosage of sulfanilamide at the start of treatment, probably accounts for the large total dose of specific serum required for recovery in this case.

CASE 4.—A white man aged 76 was admitted in a semicomatose with signs of meningeal irritation. No associated pathologic changes were found in the lungs, ears and sinuses. In the spinal fluid, containing 1,500 cells per cubic millimeter, no organisms were seen, but cultures yielded large numbers of type XXXI pneumococci. Sulfanilamide 6.4 Gm. daily was given subcutaneously the first three days, after which time the patient was able to take it by mouth until three weeks after he became afebrile. Serum was continued to the sixth day. A blood transfusion was performed on the fourth day because of the patient's weakened condition.

This case shows that aged subjects may recover from pneumococcic meningitis if promptly and vigorously treated. The absence of associated focal pneumococcic lesions was, no doubt, important in recovery.

CASE 5.—Juanita W., aged 12 years, a Negress, was admitted to another hospital two days before admission to the Cook County Contagious Hospital because of generalized convulsions.

She was thought to have jacksonian epilepsy because of a known skull fracture in 1934, followed two years later by several convulsive seizures. Pneumococcic lesions beyond the meningitis were not found. Blood culture was negative. Sulfapyridine was started the day of admission and continued beyond her febrile period. Specific antipneumococcus serum (type

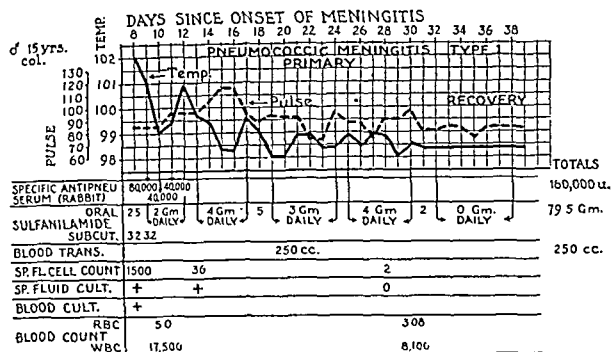


Chart 1.—Course in case 1.

XXIII) was started the third day of illness. The anemia, which necessitated blood transfusions, was thought to be due to sulfapyridine. The low level of sulfapyridine in the spinal fluid, as compared with that in the blood, is noteworthy.

Again, favorable prognosis in so-called primary meningitis as opposed to those complicated by other serious lesions is demonstrated.

CASE 6.—Marie F., aged 14 years, white, was admitted on the second day of a "primary" pneumococcic meningitis. Type XVIII organisms were identified directly in the spinal fluid and intensive therapy was begun at once. Sodium sulfapyridine was given the first two days to establish quickly an adequate blood level, after which oral doses of 2 Gm. every four hours were continued for four days to maintain it. When the dosage

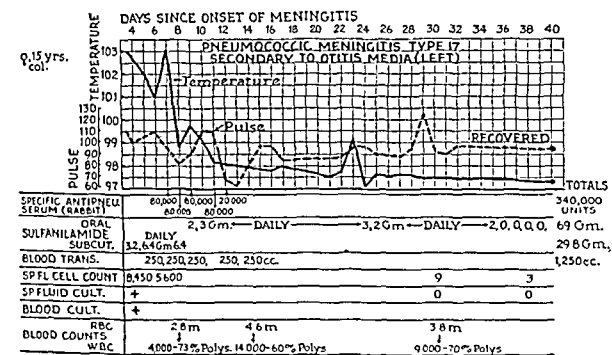


Chart 2.—Course in case 2.

was dropped to 1 Gm. every four hours there was a recrudescence of the disease with a sharp rise in temperature. When the dose of sulfapyridine was increased, the temperature dropped again.

The microscopic agglutination test with type XVIII pneumococci was strongly positive on the eighteenth day of illness. The single spinal fluid level of sulfapyridine that was determined was found to be much lower than the blood level.

CASE 7.—Antonia R., a Mexican woman aged 42, was admitted on the seventh day of meningitis due to type X pneumococci. No associated pneumococcic lesions were present. Again the plan of intensive serum therapy at the start, combined with sodium sulfapyridine administered intravenously to attain a high blood level, quickly proved effective.

COMMENT

Only those who have observed cases of pneumococcic meningitis at first hand can appreciate how desperately ill these patients are before treatment is begun. Bacte-

remia is practically always present. In most cases there are also advanced pathologic changes (table 3) in other parts of the body. When vegetative endocarditis was present (table 4) we had no recoveries and found none in the reports of other workers. Extensive unresolved pneumonia of many days' duration was also an accompanying factor which presaged an unfavorable outcome. When the spinal fluid cell count was relatively low and the number of pneumococci in the centrifuged sediment quite high, the outlook was usually rather hopeless. On the other hand, a relatively high leukocyte count with few or no pneumococci

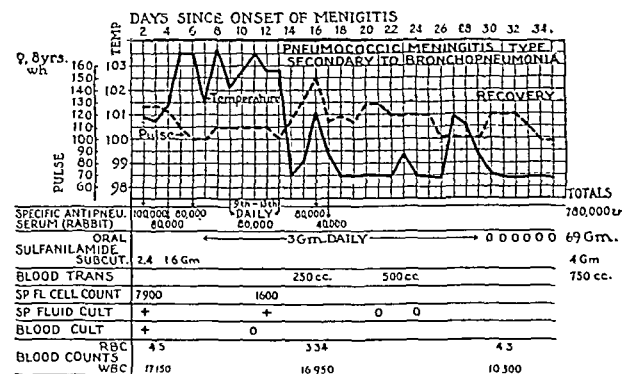


Chart 3.—Course in case 3.

on direct smear usually indicated a more favorable outcome. The best prognosis appears to be in those cases in which the disease is primary, i. e. unaccompanied by demonstrable pathologic changes elsewhere. Those cases secondary to otitis media, without pulmonary or cardiac involvement, have a reasonably good chance of recovery if drainage of the suppurative lesion is instituted quickly.

In reviewing our fatalities it was felt that only patient 1 (table 4) might have been saved by more prompt and vigorous treatment. Patient 14 became rational and afebrile after four days of treatment with sulfapyridine. The drug was continued, however. On the sixteenth day of illness the temperature again rose and focal signs pointing toward a lesion of the

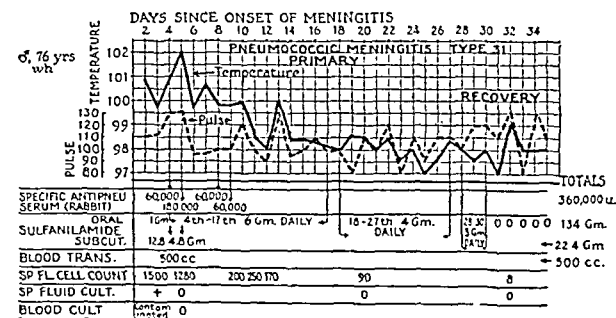


Chart 4.—Course in case 4.

right hemisphere appeared. The patient died suddenly. At autopsy an abscess of the right frontal lobe with extensive purulent meningitis was found.

PRESENT PLAN OF TREATMENT

Since we are convinced that specific antibody should be given in cases of meningitis along with chemotherapy, our first concern after making the diagnosis of suppurative meningitis is to discover the etiologic agent. Gram stains of the spinal fluid are made at once and if organisms having the structure of pneumococci (or

meningococci, Bacillus influenzae, Friedländer's bacillus) are discovered, sulfapyridine is begun at once while pneumococcus typing by the Neufeld method is carried out.

In adults, unless there is some contraindication, such as known sensitivity to sulfapyridine, severe leukopenia or jaundice, the sodium salt of sulfapyridine in doses of from 4 to 6 Gm. in 5 per cent solution is given intra-

until the temperature has been normal for several days and until the spinal fluid and blood cultures are sterile. If possible, microscopic agglutination tests are done at intervals of from two to three days. Sulfapyridine should not be stopped before a four plus reaction has been obtained.⁶

When sulfapyridine cannot be swallowed by a comatose patient it may be administered, mixed with water or milk, through a small caliber stomach tube, introduced through an opening between the teeth forced by a wedge.

Specific antipneumococcic rabbit serum is given intravenously as soon as the organism is typed. If pneumococci are not present in large numbers in the spinal fluid, direct Neufeld typing may be impossible. If so, the test may have to be performed on the peritoneal exudate of a mouse, injected from four to six hours earlier with the spinal fluid, or on cultures of the spinal fluid. Large doses of serum—up to 600,000 units in one day in one case in our series—are given intravenously in the usual way after the usual precautions against serum reactions have been

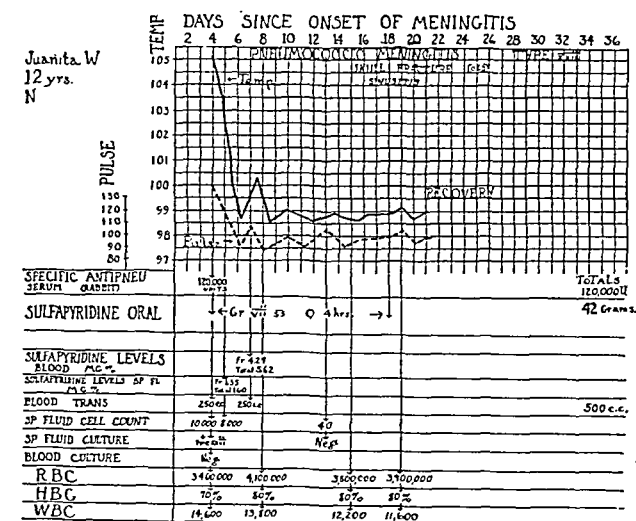


TABLE 4.—Summary of the Fifteen Fatal Cases Treated by the Authors

Case	Date of Admission	Age; Sex; Color	History	Admission Diagnosis	Days in Hospital	Condition on Admission	Initial Lumbar Puncture	Pneumo-coccus Type	Spinal Fluid Culture	Blood Culture	Trans-fusion	Sulfamido	Sulfa-pyridine	Specific Rabbit Serum	Autopsy
1	5/21/23	15 ♂ White	Headache, fever 3 days, following a head injury; known skull fracture 3 years before	Suspect meningitis; otitis media	14	Temperature 104 F., coma	25,250 W. B. C., many pneumococci	XXV	+	+	1,000 cc.	19 Gm.	0	240,000 units	No autopsy; in light of later experience we think earlier and larger doses of sulfamidamide and serum might have saved this patient
2	7/27/23	21 ♂ White	Headache following automobile accident; temperature 103.6 F. 4 days later	Suspect meningitis; skull fracture	1	Semicoma; pupils unequal	8,000 W. B. C., many pneumococci	VIII	+	+	0	5 Gm.	0	240,000 units	Extensive purulent leptomeningitis; basal skull fracture
3	8/10/23	31 ♀ White	Vomiting 2 days; headache, stiff neck 1 day; known diabetes	Suspect meningitis	1½	Alert; acutely ill	1,500 W. B. C., few pneumococci	VI	+	+	0	5.2 Gm.	0	100,000 units	No autopsy; urine had dinitic acid 4+ in spite of large doses of insulin
4	9/20/23	49 ♂ White	Headache and stiff neck 2 days	Suspect meningitis; catarrhal otitis	3	Alert; acutely ill	1,950 W. B. C., many pneumococci	XXVIII	+	+	250 cc.	15.1 Gm.	0	240,000 units	Acute purulent leptomeningitis; purulent cellulitis of right ear; lobular pneumonia
5	8/23/23	6 ♂ White	Fever, convulsions, headache, vomiting for 30 hours	Suspect meningitis; lobar pneumonia	8 hours	Comatose; temperature 103.8 F.	400 W. B. C., many pneumococci	XVIII	+	0	0	1.6 Gm.	0	74,000 units	Purulent leptomeningitis; confluent lobular pneumonia of right upper lobe; recent pleuritis, left side; vegetative endocarditis
6	10/23/23	51 ♂ White	Erratic 3 months; irrational, macul 2 days	Suspect meningitis; otitis media right	3	Comatose; temperature 102 F.; cyanotic	5,500 W. B. C., many pneumococci	III	+	0	250 cc.	37.6 Gm.	0	320,000 units	No autopsy; spinal fluid practically free of organisms at the time of death
7	11/1/23	12 ♀ White	Headache 1 day; stiff neck, deafness, fever 1 day	Suspect meningitis	17	Alert; acutely ill	900 W. B. C., very few pneumococci	XIV	+	Contaminated	1,500 cc.	63 Gm.	24 Gm.	515,000 units	No autopsy; had showers of petechiae; all clinical signs of vegetative endocarditis
8	11/12/23	1 ♂ White	Draining left ear 4 months; acute otitis media 1 day; vomiting, fever 2 days	Suspect meningitis; bilateral otitis	6	Comatose; moribund	Purulent; 300 W. B. C., pneumococci 4 plus	XVIII	+	+	700 cc.	0	17 Gm.	632,000 units	Extensive purulent leptomeningitis; confluent lobular pneumonia involving all lobes; bilateral otitis media
9	12/20/23	59 ♂ White	Headache, vomiting, irrational 1 day; skull fracture 1 year ago	Suspect meningitis	3	Comatose	14,500 W. B. C., few pneumococci	XXII	+	+	0	0	20 Gm.	400,000 units	No autopsy
10	12/11/23	33 ♂ White	Lobar pneumonia 10 days; stiff neck 1 day	Lobar pneumonia; suspect meningitis	8	Practically moribund	1,500 W. B. C., few pneumococci	XXIII	+	+	250 cc.	18.5 Gm.	90 Gm.	0	Extensive purulent leptomeningitis, vegetative endocarditis; pneumonia involving all lobes
11	2/8/29	50 ♂ White	Admitted in coma; no history	Suspect meningitis	2	Coma	Purulent; 25,000 W. B. C., intra-extra-cerebral diplococci	IX	+	Negative	0	0	15 Gm.	248,000 units	No autopsy
12	2/16/29	53 ♂ White	Onset 4 days ago of chill, fever, cough headache and stiff neck	Suspect meningitis	2	Coma	Purulent; 47,000 W. B. C.	Not typed	Not done	Not done	0	4 Gm. intravenously	0	0	Suppurative basilar pneumococcal meningitis; focal bronchopneumonia of both lower lobes; case was mistaken for epidemic meningitis; received 100,000 units of meningococcus antitoxin intravenously
13	3/13/29	16 mo. ♂ White	Pertussis just 6 weeks; irritable 3 days, fever and convulsions	Suspect meningitis	8	Coma; temperature 100 F.	3,800 W. B. C., intra-extra-cerebral diplococci	X	+	0	250 cc. daily	0	24 Gm.	0	Diffuse suppurative meningitis; confluent bronchopneumonia; bilateral otitis; thrombosis of left middle cerebral vessels
14	4/1/29	32 ♂ Negro	Head injury 3 months ago; headache 4 weeks; dizziness and stiff neck 3 days; history of syphilis; 14/39 spinal Wassermann negative	Suspect meningitis	18	Alert	6,000 W. B. C., many pneumococci	XXIII	+	0	700 cc.	...	87 Gm.	Not available	Abscess right frontal lobe with extension to meninges; localized meningitis; infectious hyperplasia of spleen, cloudy swelling of liver and kidney; fatty changes in liver
15	10/6/29	41 ♂ White	Transfer from another hospital with diagnosis: epidemic meningitis; received there 100 cc antineurococcus serum intravenously; same amount intra-spinal	Epidemic meningitis	1	Terminal	Purulent; many gram-positive intra- and extra-cerebral diplococci	XVIII	+	+	0	8 Gm. intravenously	0	0	No autopsy; this case of pneumococcal meningitis was mistakenly treated as epidemic meningitis

sodium salt) and specific antipneumococcus rabbit serum there were seven recoveries.

2. In the period covering these cases, more patients were admitted to the Cook County Hospital with pneumococcic meningitis than with meningococcic meningitis. The old teaching that purulent meningitis should be treated as meningococcic meningitis until proved otherwise is entirely outmoded. A vigorous search for the etiologic agent must be started at once and pursued until the organism is determined. Pending that time, sulfapyridine by mouth or its sodium salt intravenously should be given in large doses, unless hemolytic streptococci are strongly suspected, in which case sulfanilamide may be the better chemotherapeutic agent.

3. The best prognosis in cases of meningococcic meningitis is in so-called primary cases, i. e. those unassociated with other demonstrable pneumococcic lesions. The worst prognosis is in those cases associated with pneumococcic endocarditis and/or extensive pneumonia.

4. In addition to vigorous chemotherapy and serum therapy, surgical drainage of focal lesions, care to maintain an adequate fluid and caloric intake and occasionally blood transfusions are of the utmost importance.

Clinical Notes, Suggestions and New Instruments

MORGAN'S BACILLUS SEPTICEMIA

REPORT OF A CASE AND REVIEW OF EXTENT OF PATHOGENICITY OF THE ORGANISM

E. J. PULASKI, M.D., AND G. W. DEITZ, M.D., PHILADELPHIA

In 1906 Morgan isolated, from the stools of infants with "summer diarrhea," a previously undescribed gram-negative bacterium, Morgan's bacillus No. 1, which he considered of possible etiologic significance. Numerous papers have appeared since, denoting the pathogenicity of this organism not only in gastrointestinal disturbances but in other conditions as well.

The purpose of this paper is to present a fatal case of Morgan's bacillus septicemia, to record the failure of sulfanilamide and sulfapyridine therapy and to review some of the literature on Morgan's bacillus infections.

Septicemias due to *Bacterium morgani* are rare. Morgan grew the organisms from the heart blood taken after death from three children with summer diarrhea. Kendall, Day and Bagg cultured *Bacterium morgani*, also the Shiga bacillus, *Bacillus alkaligenes* and streptococci from the blood two days before death in a case of infantile diarrhea (antemortem invasion?). Probably the first recorded case of sepsis is that of Magath and Jackson, who obtained positive blood and feces cultures of *Bacterium morgani* in a fatal case of ulcerative colitis. The blood serum agglutinated the organisms in a 1:40 dilution. Thjotta obtained positive blood cultures and agglutination reactions in a fatal septicemia consequent upon *Bacterium morgani* empyema of the gallbladder. King isolated the organisms from the blood and lateral sinus in a case of mastoiditis with sinus thrombosis. Havens and his co-workers recorded six positive blood cultures in a series of forty-nine cases of a paratyphoid-life fever and listed two deaths. Specific antibodies could be demonstrated in the blood in most cases. D'Aunoy and Gittins and Hawksley also reported one case each of a typhoid-like fever with *Bacterium morgani* bacteremia.

Morgan's bacillus has been considered of etiologic relationship to infant diarrhea and dysentery. On the other hand the organism has been found in samples of soil and water and in the feces of healthy persons, and it has been recovered from many species of animals. However, it can be pathogenic in man and has been identified in cholecystitis (Thjotta) colitis (Thjotta, Magath and Jackson), mastoiditis (Dick, Dick and Williams, King, Sutton), meningitis (Gittins and Hawksley, Mitchell, Bier and Lange), peritonitis (Neter and Goodale), pyelitis (Jervell, Waaler, D'Aunoy, Riding), chronic discharging wounds (Whittingham, Fasting). It has been demonstrated in conjunction with mental disease (Stewart).

REPORT OF CASE

F. W., a white man aged 25, admitted to the hospital Sept. 12, 1939, was working over an acetylene torch August 21 when a hot spark flew into the left ear. He was seen almost immediately in the dispensary of this hospital, and inflammation of the external auditory canal (attendant on burn) was noted. Butesin picrate ointment was applied. Four days later he was still complaining of pain, although the inflammation had receded considerably. He was not seen again until seventeen days later (September 11), when he returned complaining of increasingly severe pain over the entire left side of the head and neck but especially in the left ear, which, he stated, discharged watery material from time to time. He also complained of weakness, occasional dizziness, a feeling of heaviness over the eyes and poor appetite. The temperature was 102.2 F. An extensive inflammatory process of the entire left external auditory canal was observed. Continuous hot wet compresses were advised, but since there was no appreciable improvement in twenty-four hours the patient was admitted to the hospital.

The past history revealed no previous disease of the ears. Because of the pain in the ear he had the left upper second and third molars extracted at another hospital the week before admission.

On examination the patient was toxic and apathetic, complaining of pain in the left ear and of a heavy aching over the eyes. The temperature was 103.2 F. There were a slight unproductive cough and profuse sweating. The left upper alveolar process showed evidence of recent extractions of teeth. The pharynx was slightly injected, and the tongue was coated. There was an extensive cellulitis of the entire left external auditory canal, with a small amount of thin watery foul-smelling discharge.

Tenderness was present over the ear anteriorly but not over the mastoid. The tympanic membrane could not be visualized. There was no regional lymphadenopathy. Examination of the heart, lungs, abdomen and extremities was negative. Ophthalmoscopic examination revealed blurring of both disk margins. Neurologic examination was entirely negative. The clinical impression was otitis externa with possible mastoid or intracranial involvement.

The leukocyte count was 8,200, with 92 per cent neutrophils. The erythrocyte count was 4,000,000 and the hemoglobin level 80 per cent. The urine was normal. Throat culture yielded hemolytic and nonhemolytic streptococci and *Staphylococcus albus*. Examination of the spinal fluid was negative. The dynamic factors were normal. Culture of the fluid remained sterile. The blood Wassermann reaction was negative. Culture of the material discharging from the left ear yielded a gram-negative motile bacillus that did not ferment lactose. Culture of blood taken a week after admission gave an abundant growth of a gram-negative motile rod, identical with that obtained from the ear. *Bacillus typhosus* antiserum did not agglutinate this organism.

Agglutination tests of the patient's blood with *Bacillus typhosus*, *Bacillus paratyphosus* A and B, *Bacillus proteus* X 19 and the *Brucella* antigens were negative on four occasions. Roentgen examination of the mastoids showed diffuse clouding suggestive of chronic mastoiditis on the left side. X-ray examination of the paranasal sinuses and chest was negative. Examination of the teeth showed rarefaction around the root of the first upper left premolar.

Compresses and irrigations of the ear were begun, and the patient was given sulfanilamide. The pain in the head and

The authors were assisted in this case by Drs. W. L. C. Spaeth and S. Sugarman.
From the Departments of Medicine and Clinical Laboratories, the Frankford Hospital.

ear was so severe that continued administration of opiates was necessary for relief. The day following admission (September 13) he had a chill lasting ten minutes with an abrupt rise of temperature. The cough became more annoying, and signs of bronchitis were present. Anorexia and vomiting were pronounced. The temperature varied from 99 to 103 F., but the pulse rate consistently remained below 90 per minute. Physical and mental exhaustion progressed.

As the cellulitis of the ear gradually subsided, the discharge became more copious and fetid. When it became possible to visualize the tympanic membrane, a pinpoint perforation of the superior posterior quadrant was seen. However, there was no bulging, and the discharge appeared to originate entirely from the canal wall. At this time the anterior cervical nodes became palpable and tender. The patient's serum agglutinated Morgan's bacilli in a 1:160 dilution.

September 17 he had another severe chill and began complaining of soreness of the left side of the mouth. A localizing inflammation around the first upper left premolar was found. September 20 he had a chill about fifteen minutes in duration. The eyegrounds revealed the same blurring of the nerve heads found previously, with a hemorrhagic area above the disk on the right side. Spinal fluid examination was again entirely negative.

The patient became increasingly stuporous. The skin and scleras were jaundiced. He complained of generalized aching with severe sweats.

The cough increased. September 24, twelve days after admission, he complained of severe pain in the right side of the chest. Physical examination revealed diminished breath sounds in the right lower lobe. That evening he had a shaking chill and the temperature rose to 105.3 F. The cough became more constant, and productive. Sputum examination on three occasions revealed the presence of many pus cells, staphylococci, streptococci, pneumococci (nontypable) and gram-negative bacilli. Blood culture gave an abundant growth of Morgan's bacilli. The blood serum agglutinated *Bacterium morgani* antigen to a titer of 1:320. Roentgen examination of the chest revealed pneumonia of the right lower lobe. The leukocytes numbered 28,000 and the erythrocytes 3,200,000. An indirect blood transfusion (500 cc.) was given. The next few days he had several shaking chills. Sulfapyridine was given, without apparent benefit. The jaundice deepened. The sweating was more profuse and the mental confusion was worse.

September 30, eighteen days after admission, pain developed in the left side of the chest, and physical signs indicative of pneumonia in the left lower lobe were found. The left ear began to discharge the same foul material. The patient became more toxic and irrational. The blood serum agglutination with *Bacterium morgani* was only 1:40 on October 1. October 2 he complained of pain in the neck along the anterior border of the sternocleidomastoid muscle, which was tender to palpation. A swelling appeared, and four days later 6 ounces of thin grayish foul-smelling pus was removed from the abscess. This material yielded a pure culture of *Bacterium morgani*. At the same time, a small abscess around the upper left first molar was opened. Only *Staphylococcus aureus* was obtained on culture of the pus. The neck continued to drain freely. Expectoration of foul-smelling sputum was constant. He became progressively worse and died October 23. *Bacterium morgani* was never isolated from any of the samples of stools or urine examined.

On postmortem examination, the changes of interest were chiefly in the head and chest. The brain was edematous and congested, but no evidence of an inflammatory process was found in the meninges. The lateral sinuses were explored from the torcular Herophili to the jugular bulb, and there was no evidence of thrombi nor of thrombophlebitis. Cultures remained sterile. The left mastoid cells, when opened, contained some exudate which when cultured showed the presence of an anaerobic nonhemolytic streptococcus but no Morgan's bacilli. On opening the chest, both pleural cavities contained large quantities of foul-smelling mucopus. Both lungs were riddled with abscesses of various sizes both on the exterior and on the interior of the lungs. One large abscess had ruptured into

the left pleural cavity. Both lungs showed dense adhesions to the chest wall. The pus yielded a pure culture of *Bacterium morgani*. The heart was soft and flabby. Culture from the heart blood also yielded Morgan's bacilli. The intestine showed no inflammation, and the peritoneal cavity was grossly normal. The kidneys were swollen, flabby and edematous and suggested toxic nephrosis.

BACTERIOLOGY

The organism is a gram-negative aerobic nonsporing rod from 1 to 3 microns long, motile when freshly isolated. On frequent subculture at 37 C. motility is greatly diminished, but the organisms remain actively motile if grown at 20 C. They are easily cultivated on ordinary laboratory mediums. When freshly isolated, colonies show a tendency to swarm and in this respect resemble *Bacillus proteus*. There is a characteristic strong fecal odor, which is lost after subculture. Later generations form colonies not unlike *Bacillus coli*. Dextrose, fructose and galactose were fermented with the production of acid and gas as was trehalose. There was no action after thirty days on arabinose, rhamnose and xylose, lactose, sucrose and maltose, mannitol, sorbitol, dulcitol, inositol and salicin. Indole and hydrogen sulfide were formed abundantly. Nitrates were not reduced. Litmus milk was turned slightly alkaline. Gelatin was not liquefied. The organism acts on sheep red cells with the production of methemoglobin.

These observations are essentially the same as reported by Jordan, Crawford and McBroom in a study of many strains of *Bacterium morgani*.

SUMMARY

1. A fatal case of sepsis was apparently due to Morgan's bacillus, with the external auditory canal as the probable port of entry. Specific agglutinins were demonstrated in the blood stream. Morgan's bacillus was isolated post mortem from the heart blood and the abscesses in the lungs.

2. Sulfanilamide and sulfapyridine therapy were of no benefit.

3. A review of the literature denotes the extent of the infectiousness of the organism.

Frankford Avenue and Wakeling Street.

MENINGITIS EPIDEMIC AMONG NAVAJO INDIANS

SIDNEY E. SEID, M.D., CHIN LEE, ARIZ.

Although many¹ claim that meningococcic meningitis usually strikes only one member of a family, this did not hold true during a recent epidemic on the Navajo Reservation. Of twenty-eight patients seen at the Chin Lee General Hospital, in twenty-four instances there was a close family relationship to another patient or patients while in only four instances were the patients the only members of the family to contract meningococcic meningitis.

Since we saw multiple cases in the family early in the epidemic, whenever a Navajo contracted meningitis we urged that the younger members of the family be brought to the hospital for fourteen days' observation and prophylactic treatment; nineteen persons from families in which meningococcic meningitis had recently occurred were admitted to the Chin Lee General Hospital and 174 to the Northern Navajo Hospital, Shiprock, N. M., for this reason. Two thirds of these persons were under 10 years of age. At the Chin Lee Hospital, those weighing less than 80 pounds (36 Kg.) received a daily total dosage of sulfanilamide of one-half grain per pound (0.032 Gm. per 450 Gm.) body weight. Those weighing more than 80 pounds received a daily total dosage of 40 grains (2.6 Gm.). At the Shiprock hospital, Dr. R. K. Setzler (who gave permission to report those cases) and Dr. Jacob Seigel gave all their patients a daily total dosage of one-half grain per pound of body weight. At both hospitals this drug was continued for fourteen days. Fourteen days was chosen because most observ-

From the U. S. Indian Service.

1. Griffith, J. P. C., and Mitchell, A. G.: *Diseases of Infants and Children*. Philadelphia, W. B. Saunders Company, 1937, p. 319. Schamberg, J. F., and Kolmer, J. A.: *Acute Infectious Diseases*, Philadelphia, Lea & Febiger, 1928, p. 830.

ers agree that the incubation period of meningococcic meningitis is less than fourteen days.

None of the 193 persons who received sulfanilamide as a prophylactic developed meningococcic meningitis while taking the drug. Two of the 193 developed meningococcic meningitis approximately one month after discontinuing the drug. The remaining 191 did not develop the disease.

We can only estimate the rate of incidence in this epidemic because we know that not all cases that occurred were brought to our attention. The most accurate count that has been made for the areas concerned in the epidemic showed a population of 11,000. The physicians in the area know of ninety-two cases. This gives an approximate incidence of one case to 120 of population. This is a very high rate of incidence, since one case to 800 population is considered epidemic.²

One of the patients who received prophylactic treatment was a nursing aged 1½ months whose mother had meningococcic meningitis. The infant suckled at her mother's breast up to the second day of illness and thereafter was in intimate contact with her mother and in less intimate contact with other patients with the disease. That the infant did not become ill may have been because (a) the child was actively immune, (b) the child was passively immune, (c) the child escaped contagion, or (d) sulfanilamide protected the child.

At 1½ months of age it is possible, but unlikely, that the child had developed an active immunity. It seems unlikely too that the child was passively immune, because it is generally agreed that the passive immunity displayed by infants is derived from the mother³ and in this instance the mother demonstrated her lack of immunity by contracting the disease. However, instances of mothers who were susceptible to diphtheria or scarlet fever while the nursing was immune have been reported.⁴ As to the child escaping contact with meningococci, any one observing the intimate contact between mother and child before and after the diagnosis was made would dismiss that possibility. If one reasons by exclusion, the possibility of sulfanilamide having protected the child grows more likely as the other possibilities seem less likely, and especially so since it has been demonstrated that sulfanilamide has curative value in cases of meningococcic meningitis.⁵

It is possible that in a group of 193 persons selected at random none of them might contract meningitis in any epidemic during a fourteen day period, although I feel strongly that this particular group of persons had far more possibility of contracting the disease than is usual because of their concentrated exposure and the higher rate of susceptibility in the residents of the Navajo Reservation at this time. This would seem especially true since the epidemic showed a strong tendency to affect successive members of the same family in a short period of time.

SUMMARY

In an outbreak of meningococcic meningitis on the Navajo Reservation the disease tended to affect several members of the same family.

This was a very severe epidemic.

Nothing in this study would indicate that sulfanilamide in moderate doses is valueless as a prophylactic for meningococcic meningitis during the time it is being administered.

2. Schamberg and Kolmer: *Acute Infectious Diseases*, p. 829. Griffith and Mitchell.¹

3. McKhann, C. F., and Kapnick, Israel: *J. Pediat.* **13**: 907 (Dec.) 1938.

4. Wadsworth, Augustus, and Hoppe, Ella N.: *J. Exper. Med.* **53**: 821 (June) 1931.

5. Schwentker, F. F.: *J. Pediat.* **11**: 874 (Dec.) 1937.

Qualifications Necessary for a Flight Surgeon.—The qualifications necessary for a properly trained and successful flight surgeon are many and exacting. As in any other specialty, aviation medicine should be built on a solid foundation of general medical knowledge. An intense interest in any one specialty of general medicine is not desirable, owing to the narrow outlook which usually accompanies such an interest. A well rounded, many-sided man is much to be preferred.—Armstrong, Harry G.: *Principles and Practice of Aviation Medicine*, Baltimore, Williams & Wilkins Company, 1939.

Special Clinical Article

USE OF SULFANILAMIDE AND RELATED COMPOUNDS IN DISEASES OF INFANCY AND CHILDHOOD

CLINICAL LECTURE AT NEW YORK SESSION

BENJAMIN W. CAREY, M.D.

DETROIT

The advent of the sulfonamide compounds has probably had a more favorable effect on the course of many infectious diseases in pediatrics than in any other field of medicine. This paper will present as briefly as possible the indications for the use of the various drugs, the results of treatment, dosage and methods of administration of the sulfonamide compounds, contraindications to chemotherapy, and toxic manifestations of the drugs in infants and children.

BETA HEMOLYTIC STREPTOCOCCUS INFECTIONS

Erysipelas.—Response to therapy has been dramatically favorable in this type of infection. A reduction in the mortality of patients under 2 years of age from approximately 35 per cent to 5 per cent has occurred in most hospitals in which erysipelas is treated. The majority of deaths has occurred in cases of overwhelming infection in less than twenty-four hours after admission to the hospital. More experience has been gained with sulfanilamide, but favorable results have been observed with sulfapyridine and sulfathiazole. Sulfanilamide is probably the drug of choice because of its rapid absorption and its ease of administration.

Respiratory Infections.—Response to chemotherapy in infections of the upper respiratory tract due to the beta hemolytic streptococcus such as rhinitis, pharyngitis, tonsillitis, sinusitis and otitis media has been unpredictable in many instances. However, if the infection is suspected or proved to be due to the beta hemolytic streptococcus, routine administration of sulfanilamide is desirable. Complications may be averted, especially mastoiditis, which may be prevented or aborted with prompt and effective administration of the drug. Present experience suggests that sulfapyridine or sulfathiazole is as effective as sulfanilamide in this group of infections.

Bronchitis, Pneumonia and Empyema.—Experience has been somewhat limited in this group of infections, but good results with chemotherapy have been observed. It is doubtful whether the incidence of surgical procedures has been materially reduced in cases of empyema by chemotherapy, but the course of the process may be shortened in certain instances and a spread of the pneumonia to the opposite lung may be prevented. Sulfathiazole is probably the drug of choice in this group because of the possibility of a mixed infection with the pneumococcus or the staphylococcus.

Septicemia.—Prompt sterilization of the blood stream and improvement in the lesion responsible for the septicemia has occurred in the majority of cases following chemotherapy. Other therapeutic measures such

From the Children's Hospital of Michigan and the Department of Pediatrics, Wayne University College of Medicine.

Read in the Symposium on Chemotherapy, General Scientific Meetings, at the Ninety-First Annual Session of the American Medical Association, New York, June 11, 1940.

The antipneumococcus rabbit serum used in cases of pneumococcal infection was furnished by the Lederle Laboratories, Inc., Pearl River, N. Y., and the sulfathiazole was supplied for clinical trial by the Squibb Institute for Medical Research, Dr. George A. Harrop, director, New Brunswick, N. J.

as blood transfusions and proper surgical intervention must not be overlooked or neglected. Sulfapyridine or sulfathiazole seems as effective as sulfanilamide.

Scarlet Fever.—Present experience indicates that chemotherapy combined with antitoxin or convalescent serum is the treatment of choice for most patients with scarlet fever. The drugs have no effect on the toxic manifestations of the disease but are responsible for the reduction in the number of complications due to invasion of the beta hemolytic streptococcus from the throat. Sulfanilamide seems to be the drug of choice, although favorable effects have been observed with sulfapyridine.

Meningitis.—Chemotherapy has been effective in bringing about a marked reduction in mortality due to beta hemolytic streptococcus meningitis. Prior to chemotherapy the mortality was nearly 100 per cent, and this has been reduced to approximately 15 per cent, according to a recent summary.¹ It is desirable to institute intensive treatment with oral, parenteral and intrathecal medication in this type of meningitis, and sulfanilamide is the drug of choice because of its greater diffusibility and the variety of methods for its administration. Sulfathiazole should not be used in meningeal infections, as its concentration in the spinal fluid reaches only from 10 to 30 per cent of that in the other body fluids (table 1).

Osteomyelitis.—In osteomyelitis due to the beta hemolytic streptococcus chemotherapy should always be instituted. The response to treatment may be unpredictable, but in acute cases of septicemia the infection may be more rapidly localized, the fever reduced and the blood sterilized. Occasionally the chronic form of the disease may be cured with chemotherapy.

Peritonitis.—Considerable disagreement exists as to the most effective plan of treatment of primary beta hemolytic streptococcus peritonitis. Early surgical drainage plus chemotherapy versus chemotherapy alone divides opinion among surgeons and pediatricians. Possibly no routine rule should be followed but each case should be individualized and effective measures adopted as the occasion demands. Undoubtedly chemotherapy has aided in lowering the fatality rate and complications in this form of infection. Too few cases have been treated to evaluate properly the effect of sulfapyridine or sulfathiazole or to compare these compounds with sulfanilamide.

STREPTOCOCCUS VIRIDANS INFECTIONS

Subacute Bacterial Endocarditis.—Although a few reports exist of patients with subacute bacterial endocarditis cured by chemotherapy, it is generally agreed that the most to be gained is a temporary improvement of the patient's condition and sterilization of the blood. Certainly no definite curative effect on the underlying pathologic condition has been demonstrated.

Septicemia.—Septicemia other than that accompanying endocarditis has responded favorably to chemotherapy. Sulfanilamide or sulfapyridine seems to be equally effective in bringing about a rapid sterilization of the blood.

Meningitis.—Cases of meningitis due to Streptococcus viridans are rare, but there are a few reports of favorable results with chemotherapy. I have observed three patients under 2 years of age with this type of meningitis who rapidly recovered following intensive treatment with sulfapyridine.

PNEUMOCOCCIC INFECTIONS

Pneumonia.—Chemotherapy of pneumococcal pneumonia of infants and children has definite advantages over serum therapy: 1. Sputum typing of infants and children is difficult and more liable to error than of adult patients. 2. The finding of more than one type of pneumococcus in the sputum is not uncommon and is confusing if serum therapy is contemplated. 3. The administration of intravenous serum is a difficult procedure with infants and small children. In my experience pneumonia has been a relatively mild disease in the past two winters, which makes evaluation of specific therapy difficult. At the Children's Hospital of Michigan² it was found in the winter of 1938-1939 that the use of either sulfapyridine or specific antipneumococcus rabbit serum as compared with a series of untreated controls had the following effects: (1) reduction of the fatality rate, (2) reduction in the duration of the disease and subsequent period of hospitalization and (3) reduction in the incidence of complications such as meningitis, otitis media and mastoiditis, and empyema. During the past winter combined treatment with sulfapyridine or sulfathiazole and specific antipneumococcus rabbit serum has been compared with chemotherapy alone in the treatment of

TABLE 1.—Sulfathiazole: Blood and Spinal Fluid Concentrations (Simultaneous Samples)

Age	Date	Blood, Mg. per 100 Cc.	Spinal Fluid, Mg. per 100 Cc.
6 mos.	Case 1		
	April 23	6.4	2
	April 24	5.6	1.2
	April 26	4.5	0.8
10 yrs.	Case 2		
	May 9	3.4	0.8
	May 11	3.5	0.6
	May 14	5.6	0.4
	May 16	6.5	1.0

pneumococcal pneumonia. The fatality rate has been so low that no statistical differences could be found. However, in the cases in which serum combined with sulfapyridine or sulfathiazole was given it was observed that the temperature became normal about eighteen hours sooner after treatment was started than when the drugs alone were administered. In a group of cases therapy was also followed this year with the Francis test (type specific capsular carbohydrate substance) and it was observed that the cutaneous reaction after chemotherapy alone was quite irregular or remained negative even though a favorable response to the drug had occurred. This observation was correlated with the recurrence of the same type of pneumonia within two to three weeks in a group of six patients who were treated with sulfapyridine. In my experience sulfathiazole is as effective as sulfapyridine in cases of pneumococcal pneumonia. It is desirable to type all cases and to administer specific antipneumococcus rabbit serum to any patient with bacteremia, with involvement of large areas of lung or with extreme toxicity.

Empyema.—Chemotherapy has little effect on the course of pneumococcal empyema and the usual methods of surgical drainage need to be instituted. In the event that pneumonia is present in the opposite lung, or the patient is quite toxic with a high fever, administration of sulfapyridine or sulfathiazole may be desirable.

Otitis Media.—Chemotherapy with sulfapyridine or sulfathiazole should be instituted in the event that the pneumococcus is cultured from an infection in the

1. Kolmer, J. A.: Progress in Chemotherapy of Bacterial and Other Diseases, Arch. Int. Med. 65: 671 (April) 1940.

2. Carey, B. W., and Cooley, T. B.: J. Pediat. 15: 613 (Nov.) 1939.

middle ear. This might be an argument for the administration of sulfapyridine or sulfathiazole rather than of sulfanilamide to all patients with otitis media.

Meningitis.—Reports may be found of cures of this type of meningitis with both sulfanilamide and sulfapyridine with and without the addition of specific serum. The desirable method of treatment is to administer adequate doses of sulfapyridine, intravenous anti-pneumococcus rabbit serum and intrathecal serum plus complement. However, good results will be obtained only in cases which are diagnosed and treated early.

Peritonitis.—In primary peritonitis due to the pneumococcus, chemotherapy has played an effective part. As with primary beta hemolytic streptococcus peritonitis it is advisable to individualize the case and not follow a routine rule about incision and drainage versus no surgery. Because of the greater effectiveness of sulfapyridine against the pneumococcus and action equal to sulfanilamide against the beta hemolytic streptococcus, it is advisable to administer sulfapyridine or sulfathiazole to a patient with primary peritonitis until such time as the exact bacterial diagnosis is made.

MENINGOCOCCIC INFECTIONS

Septicemia.—Excellent results have been reported with the use of sulfanilamide in sterilizing the blood in chronic meningococcemia. The results with sulfapyridine have been favorable but few cases have been reported.

Meningitis.—Many rapid cures have been reported following the use of sulfanilamide in meningococcic meningitis. In fact, results have been as good with the drug alone as with combined serum and sulfanilamide therapy. However, it is well known that certain strains of the meningococcus are resistant to sulfanilamide. While less experience has been obtained with sulfapyridine, reports in the literature and my experience lead me to believe that this drug is as effective as sulfanilamide. Sulfanilamide may be the drug of choice because of its greater diffusibility throughout the body and the ease and variety of methods of its administration. The failure of sulfathiazole to reach adequate concentrations in the spinal fluid should again be emphasized; this drug should not be administered for the treatment of meningitis. The question of anti-meningococcus serum in addition to chemotherapy cannot be fully answered from my past experience. It has been my policy to reserve the use of intrathecal serum for patients who do not respond rapidly with sterilization of the spinal fluid and a reduction of the spinal fluid leukocyte count after from thirty-six to forty-eight hours of chemotherapy. In severe fulminating cases in which there is evidence of septicemia from the presence of multiple petechiae, it is advisable to initiate treatment with both intravenous meningococcus antiserum and parenteral sulfanilamide solution by hypodermoclysis or intravenously.

GNOCOCCIC INFECTIONS

Ophthalmia Neonatorum.—There is no doubt as to the efficacy of chemotherapy in reducing the complications and duration of the disease in this type of gonococcic infection. Michels³ in 1938 showed in a series of fifteen patients treated at the Children's Hospital of Michigan that complications were reduced to zero and the average period of hospitalization was reduced from 28.5 days to 5.8 days. Since this report an equal number of patients has been treated with the

same excellent result. Equally favorable results have been obtained with sulfapyridine.

Vulvovaginitis.—In general, the reports in the literature have shown similar results from chemotherapy in vulvovaginitis as in adult gonococcic infections. My experience has been limited to a small group of ten cases, in seven of which there was a rapid and permanent cure with sulfanilamide. The drug had little influence on the other three patients. From unpublished reports better results have been observed by combining endocrine therapy with sulfanilamide. Sulfapyridine has equally good effect and may even be superior to sulfanilamide, although few cases have been reported in which this compound was used.

STAPHYLOCOCCIC INFECTIONS

My experience with sulfanilamide and sulfapyridine in the common staphylococcic infections encountered in pediatrics, namely septicemia, osteomyelitis, pneumonia, furunculosis and other types of cutaneous infections, has convinced me that neither drug had much effect. With the advent of sulfathiazole new hope was raised for a form of chemotherapy with definite antistaphylococcus action.

Cutaneous Infections.—My experience with this group consists of two infants with infected eczema, two patients with furunculosis, one patient with impetigo and two patients with deep abscesses. In general the results were not dramatic but it was concluded that the drug probably had a definite effect in reducing the temperature and shortening the period prior to incision and drainage. According to the few reports in the literature at this time the experience of others has been similar.

Septicemia.—Six patients with staphylococcic septicemia were treated with sulfathiazole. Two of these were infants with acute ethmoiditis and septicemia, both of whom died within forty-eight hours of admission to the hospital. One patient with pneumonia and staphylococcic septicemia received only forty-eight hours of sulfathiazole therapy during seven days of hospitalization, an amount considered inadequate, and this patient died. Three patients had a staphylococcic septicemia accompanying acute osteomyelitis. The response to the drug was dramatic, with sterilization of the blood and reduction of the temperature to normal after twenty-four hours of chemotherapy. However, incision and drainage of the bone abscess was necessary.

Pneumonia.—Four of six patients with staphylococcic pneumonia, other than the one with septicemia and pneumonia mentioned previously, who were treated with sulfathiazole had a prompt reduction in fever and the duration of the disease seemed to be shortened. One patient with staphylococcic empyema was treated with sulfathiazole and no change was observed either on the temperature course or on the accumulation of fluid in the pleural space.

HAEMOPHILUS INFLUENZAE INFECTIONS

Septicemia.—Septicemia caused by a smooth virulent strain of *Haemophilus influenzae* has not responded to chemotherapy in my experience. Infection caused by less virulent rough strains may be effectively treated with chemotherapy alone. However, it is advisable in all cases to combine therapy with sulfanilamide and *Haemophilus influenzae* serum.

Meningitis.—Likewise, meningitis caused by smooth virulent strains of *Haemophilus influenzae* is little influenced by chemotherapy alone, whereas reports exist

3. Michels, M. W.: J. Pediat. 13: 527 (Oct.) 1938.

of cures of meningitis caused by less virulent strains. Best results in the severe infections have been obtained by combined therapy with doses of sulfanilamide large enough to obtain spinal fluid concentrations of free sulfanilamide of from 20 to 25 mg. per hundred cubic centimeters and intravenous serum and intrathecal serum plus complement. Occasionally a dose of 4 grains (0.26 Gm.) per pound (450 Gm.) has been administered to maintain such a concentration. My experience with combined chemotherapy and Haemophilus influenzae serum has been disappointing. In the past two years I have treated ten patients with combined therapy, and the fatality rate has been 80 per cent in this group.

INFECTIONS OF THE URINARY TRACT

In the absence of marked anatomic abnormalities of the urinary tract or infections of long standing with diminution of kidney function, chemotherapy has played one of its most important parts. In fact, with the exception of mandelic acid, sulfanilamide and sulfathiazole have placed all other urinary antiseptics in the position of historical interest.

Infections Due to the Bacillus Coli Group of Bacteria.—Sulfanilamide shows its best effect in this group of organisms, which fortunately is the most common cause of infection in the urinary tract. Prompt reduction of the leukocytes in the urinary sediment and sterilization of the urine is the usual course with chemotherapy. The effective concentration of free sulfanilamide in the urine is between 75 and 150 mg. per hundred cubic centimeters. Sulfapyridine has not been as effective as sulfanilamide. However, sulfathiazole seems to be similar to sulfanilamide in therapeutic action.

Infection Due to Bacillus Proteus.—Sulfanilamide and sulfathiazole are the only chemotherapeutic agents effective in this type of infection, the chief characteristic of which is the production of a highly alkaline urine following proteolytic activity of the organism.

Infection Due to the Staphylococcus.—Sulfanilamide has not been as effective in this type of urinary infection. Unpredictable results have been obtained in treatment. Sulfathiazole seems to be more reliable as a chemotherapeutic agent in staphylococcal infection of the urinary tract.

Infection Due to Streptococcus Faecalis.—Both sulfanilamide and sulfapyridine are without value in sterilizing the urine in infections caused by Streptococcus faecalis. Mandelic acid was the only effective drug until the advent of sulfathiazole, which has given promise of producing sterilization of the urine when the infecting organism is Streptococcus faecalis.

BRUCELLA INFECTIONS

Reports are at variance on the effect of sulfanilamide on undulant fever. My experience has been limited to a group of three patients in the acute stage of the disease when Brucella abortus could be cultured from the blood. In this small group of patients the sulfanilamide had no demonstrable effect on either the temperature or the course of the disease.

TYPHOID-DYSENTERY INFECTIONS

I have been unable to find any change in the symptoms or course of typhoid with the usual dose and blood levels of sulfanilamide or sulfapyridine. In dysentery caused by the bacilli of Sonne and of Flexner, sulfanilamide or sulfapyridine had no effect on the fever, course of the disease or cultures of the stool. I have had no experience with sulfathiazole in these infections.

TRACHOMA

Sulfanilamide has been found to have a favorable effect on trachoma in bringing about an amelioration of symptoms and allowing healing to take place. My experience has been small but agrees with that of others as reported in the literature.

INFECTIONS IN WHICH CHEMOTHERAPY IS CONTRAINDICATED

Rheumatic Fever.—It has been adequately proved that sulfanilamide has no effect on rheumatic infections, and in fact exacerbations of the disease have been observed during administration of sulfanilamide.

Diphtheria.—This should be emphasized because of the common and desirable practice of administering sulfanilamide to patients with throat infections. One should not forget to culture material from these throats for the presence of Bacillus diphtheriae before starting chemotherapy and to administer diphtheria antitoxin if such an infection is present. There is a certain amount of evidence that sulfanilamide may be destructive to the diphtheria bacillus but that it has no effect on the toxin, and disastrous complications such as neuritis or myocarditis may occur later if antitoxin is omitted.

Virus Infections.—There is sufficient evidence to conclude that the sulfonamide compounds have no effect on infections caused by a filtrable virus such as the common cold, epidemic influenza, poliomyelitis and the exanthemas measles, chickenpox and smallpox.

DOSAGE AND METHODS OF ADMINISTRATION

Certain general principles concerning chemotherapy need to be emphasized. In all cases it is desirable to know the body weight and calculate the dosage on this basis. It is usually advisable to initiate treatment with a dose larger than any of the maintenance doses. A favorable response to therapy will usually occur within two to four days from the onset of chemotherapy, and prolonged medication in the hope of a delayed response has little to be desired.

The full dose of the drug selected should be administered for approximately forty-eight hours after a favorable response has been obtained. The dose should then be halved and maintained for a period of two or three days before the drug is discontinued. Recurrence or spread of infection is most likely to be averted if this plan is rather strictly adhered to.

I have not administered alkali with any of the sulfonamide compounds for the past two years, except with sulfanilamide for the treatment of urinary infections to maintain the urine alkaline throughout the period of chemotherapy. The results of my studies of the carbon dioxide power and the p_H of the blood of patients presenting hyperpnea during chemotherapy concur with the conclusions of Hartmann⁴ that acidosis does not result from chemotherapy and that the routine administration of alkali with the sulfonamides is unnecessary. Alkalization of the urine of patients with urinary infection does not appear to be necessary if sulfathiazole is administered.

Nausea and vomiting following the oral administration of the sulfonamides has occasioned little difficulty in my experience. I have administered the drugs to infants by crushing the tablets in a small quantity of fluid and feeding by a teaspoon, and to children by the same method or by feeding the whole tablet with small quantities of sweetened fluids. Significant blood concentrations of the drugs have been observed even in the

4. Hartmann, A. F.: Ann. Int. Med. 13: 949 (Dec) 1939

presence of some vomiting, and unless the vomiting was continuous and severe chemotherapy was not discontinued. Frequently the vomiting was relieved by omitting the drug for one or two doses rather than discontinuing it.

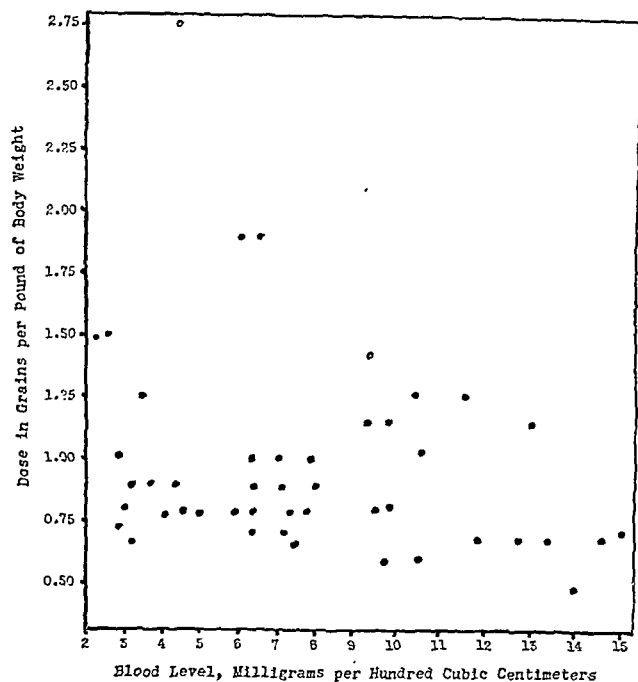


Chart 1.—Relation of dose of sulfanilamide to blood level.

I have observed that the height of the blood level does not always have a direct relationship to the size of the dose during administration of both sulfanilamide and sulfapyridine. The charts show the average blood concentrations for "free" sulfanilamide and sulfapyridine compared to the daily dose of the drug. Estimations of the blood concentration of the drugs are

TABLE 2.—Sulfanilamide: Desirable Blood Level from 8 to 12 Mg. per Hundred Cubic Centimeters

1. Oral
Initial: One-half grain per pound (maximum 60 grains)
Maintenance: 1 to 1½ grains per pound in 24 hours in 4 to 6 doses (maximum 120 grains)
2. Subcutaneous: 0.8% in 0.85% saline solution
Initial: 5 cc. per pound (maximum 500 cc.)
Repeat: 3 to 5 cc. per pound at 8 to 12 hour intervals
3. Intravenous and intrathecal: 0.8% in 0.85% saline solution
Intravenous: Dilute with equal parts 10% dextrose or 0.85% saline solution (maximum 3 cc. per pound in 24 hours)
Intrathecal: 5 cc. less than volume of spinal fluid withdrawn

therefore desirable in order that the dosage may be properly adjusted.

Tables 2 and 3 outline the dosages of the drugs which are most frequently followed and the methods of administration of sulfanilamide, sulfapyridine and sulfathiazole.

TOXIC MANIFESTATIONS

Cyanosis.—Sufficient evidence has accumulated to prove beyond question that the cyanosis encountered during chemotherapy is due to the formation of methemoglobin and rarely sulfhemoglobin. For the past eighteen months at the Children's Hospital of Michigan it has been a routine procedure to obtain total hemoglobin, methemoglobin and sulfhemoglobin estimations simultaneously with the estimation of the drug concentration on the same micro blood sample by means of the photoelectric colorimeter. Ninety per cent of all patients receiving either sulfanilamide, sulfapyridine

or sulfathiazole have had amounts of methemoglobin varying from 0.5 Gm. to 3 Gm. The largest amounts have been observed in cases in which sulfanilamide was given. In addition, 5 per cent of all patients receiving the drugs have had approximately 0.5 Gm. of sulfhemoglobin in their peripheral blood samples. The amount of methemoglobin has rarely occasioned concern and was readily controlled by the administration of methylene blue orally or intravenously. This simple procedure may be indicated in cases in which there is a low total hemoglobin or in cases in which a general anesthesia is contemplated.

TABLE 3.—Sulfapyridine or Sulfathiazole: Desirable Blood Level from 4 to 8 Mg. per Hundred Cubic Centimeters

1. Oral
Initial: One-fourth grain per pound (maximum 45 grains)
Maintenance: 1-1½ grains per pound in 24 hours, in 4 to 6 doses
2. Intravenous: Sodium sulfapyridine 5% in sterile distilled water
Sodium sulfathiazole 5% in sterile distilled water
Initial: 1.25 cc. per pound (maximum 100 cc.)
Repeat: 1.25 cc. per pound at 12 hour intervals, sodium sulfapyridine 1.25 cc. per pound at 8 hour intervals, sodium sulfathiazole
3. Rectal: 5% sodium salt in sterile distilled water
Dose: 2-3 cc. per pound in 24 hours, divided in 4 to 6 rectal taps

Blood Destruction.—Acute hemolytic anemia and granulocytopenia have rarely been observed by me, although reports of a considerable incidence of hemolytic anemia exist in the literature. If either of these manifestations occurs, the drug should be stopped at once and proper corrective measures instituted, such as to increase the fluid intake and the giving of blood transfusions. Free use of transfusions of blood is a common practice in most hospitals for infants and children, which

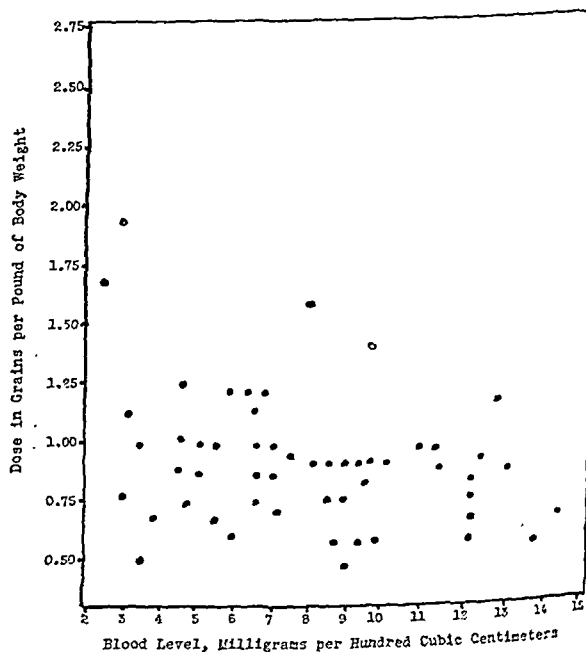


Chart 2.—Relation of dose of sulfapyridine to blood level.

may explain the relatively low incidence of manifestations of blood destruction in this age group.

Nausea and Vomiting.—Nausea and vomiting have been encountered less frequently in chemotherapy in pediatrics than in adult practice. Sulfapyridine has produced more difficulty than sulfanilamide, but nausea and vomiting have rarely been observed in sulfathiazole therapy. In fact, patients have tolerated sulfathiazole

when previously sulfanilamide or sulfapyridine produced intense vomiting.

Cerebral Symptoms.—Headache, depression, confusion or manic states are rare in infants and children receiving chemotherapy. Occasionally in the older child a temporary depression has been observed, but rarely has it been severe enough to warrant withdrawal of the drug.

Hematuria.—Urinary concretions of acetylsulfapyridine and hematuria have been observed in cases in which sulfapyridine is being given. The incidence has been less than 1 per cent, and permanent kidney dysfunction is rare. Acetylsulfathiazole crystals and hematuria have been observed during administration of sulfathiazole.

Hepatitis and Jaundice.—A few cases of hepatitis and jaundice have been observed during chemotherapy in infants and children.

Fever and Rashes.—Fever as a toxic manifestation to chemotherapy has been observed in about 1 per cent of infants and children. Usually it has not been difficult to distinguish the fever from that accompanying the infection. It has been suggested that fever may be a forewarning of a severe toxic reaction and discontinuance of chemotherapy is advisable. I have not observed this. Various types of rashes have been observed as a reaction from all the chemotherapeutic agents. These have included morbilliform types, a diffuse erythema, urticaria and, more recently, a rash resembling erythema nodosum, as described by Haviland and Long,⁵ has been observed during therapy with sulfathiazole.

If any of the following toxic manifestations are encountered, the drug should be immediately withdrawn: acute hemolytic anemia, granulocytopenia, purpura, hepatitis and jaundice.

Unless the infection for which the drug was prescribed has not been controlled, it is advisable to discontinue therapy if any of the following toxic manifestations appear: hematuria, severe nausea and vomiting, drug fever and rashes.

PROPHYLAXIS

Surgery.—Reports of the prophylactic use of the sulfonamides in pediatric surgery are few. A few pertinent suggestions may be made for the application of this practice.

The prophylactic use of sulfanilamide prior to tonsillectomy may be considered. If a tonsillectomy is contemplated during the late convalescent stage of scarlet fever the administration of sulfanilamide before and after the operation may prevent invasion and complications from the beta hemolytic streptococcus. Tonsillectomy on patients with rheumatic infections occasionally results in a disastrous invasion by the beta hemolytic streptococcus and exacerbation of the rheumatic process. The prophylactic use of sulfanilamide as a preoperative and postoperative measure is worthy of consideration.

During the winter months when the incidence of respiratory infections is high in any children's hospital, pneumonia is occasionally an undesirable postoperative complication of both emergency and elective surgical procedures. The routine administration of sulfapyridine or sulfathiazole as part of the postoperative therapy may be seriously considered in the hope that postoperative pneumonia may be prevented.

Rheumatic Infections.—Two reports have appeared⁶ on the prophylactic administration of small daily doses of sulfanilamide (from 10 to 15 grains, or 0.65 to 1 Gm.) to patients with rheumatic infections to prevent beta hemolytic streptococcus infections of the upper respiratory tract, with which there is so frequently an exacerbation of the rheumatic process. More experience is needed to evaluate this procedure thoroughly, but it deserves consideration.

Miscellaneous.—The prophylactic administration of the sulfonamides during epidemics of beta hemolytic streptococcus infections of the throat, epidemics of scarlet fever and epidemics of meningococcal meningitis has been suggested but no wide experience with this procedure has been reported.

Therapeutics

THE THERAPY OF THE COOK COUNTY HOSPITAL

EDITED BY BERNARD FANTUS, M.D.
CHICAGO

NOTE.—In their elaboration, these articles were submitted to the members of the attending staff of the Cook County Hospital by the director of therapeutics, the late Dr. Bernard Fantus. The views expressed by various members are incorporated in the final draft for publication. When completed, the series will be published in book form.—ED.

THE THERAPY OF ACUTE DELIRIUM (TOXIC PSYCHOSIS, FEVER PSYCHOSIS, INANITION PSYCHOSIS)

IN COLLABORATION WITH S. H. KRAINES, M.D.

Under this heading will be discussed acute symptomatic delirium, which is a more or less temporary condition of disorientation usually accompanied by hallucinatory states and often by a predominant affect of fear. It is due to disturbance in the metabolism of the brain, be this from toxemia, inanition or edema—of a reversible type so that complete recovery may occur. The therapy of delirium is the most frequent psychiatric problem facing the physician, no matter whether he is in general or in special practice. As delirium is in itself a danger to life, not only to the patient himself but also to his attendants, and as it greatly increases the patient's suffering and the difficulty of treatment and beclouds the prognosis, every effort should be bent on its early recognition. In early stages deliriums are often preventable or can be greatly ameliorated and the danger to life and limb much diminished.

One must guard against delirium in all cases of fever and of inanition, in cardiovascular and renal disorders most especially when there is edema or nitrogen retention, in cases of head injury, in cases with acute impairment of the sensory apparatus (vision or hearing) and in cases in which drugs disturbing brain function have been administered, whether bromide, opiate, hypnotic or anesthetic, and in alcoholic addicts suffering from any sickness whatever. Indeed, every chronic alcoholic addict who is seriously sick in any way or who has sustained an accident presents a potential case of delirium tremens. That he is on the verge of delirium may be assumed by the finding of tremor, apprehensive-

⁵ Haviland, J. W., and Long, P. H.: Bull. Johns Hopkins Hosp. 66: 313 (May) 1940.

⁶ Thomas, Caroline B., and France, Richard: Bull. Johns Hopkins Hosp. 64: 67 (Jan.) 1939. Courn, A. F., and Moore, Lucile V.: J. Clin. Investigation 18: 147 (Jan.) 1939.
Dr. Fantus died April 14, 1940.

ness and motor restlessness even without the occurrence of visual or auditory hallucinations.

Whether a patient does or does not develop delirium depends on (a) the severity of the toxemia or malnutrition and (b) the constitutional and emotional stability of the patient at the time of illness. Patients under emotional tension may develop delirium from relatively slight causes.

DIAGNOSIS

1. *Mental Symptoms.*—Deliriums tend to involve primarily the intellectual function. This is in contradistinction to the relative intactness of this function in schizophrenic and manic-depressive psychoses. The intellectual functions include orientation as to time, place and person, memory for recent and remote events, general information, ability to calculate and ability to use an adequate amount of judgment. Here again it must be remembered that these functions can be evaluated only in the light of the individual's ability before the psychosis began. The memory may be poor, calculation inefficient and judgment inadequate, and still the individual may not be delirious but may be feeble-minded or uncooperative.

The involvement of the higher intellectual functions results in a release of the more primitive mental functions, so that in these psychoses the basis personality which is ordinarily masked by inhibitions and conditioned experience tends to come to the fore almost in proportion to the degree of involvement of the cerebral cortex. It is for this reason that the various deliriums present such a wide variation in picture. The same basic pathologic condition may manifest itself in one patient as a euphoric manic illness. Another patient with this disease may be depressed; still others will present delusions of persecution and will simulate typical dementia praecox. Not infrequently these patients show a simple dementia with no particular mood change. The symptoms in themselves may vary from the muttering restlessness of the typhoid patient to that of the violent agitation and hallucinosis of the acute alcoholic addict. Often there are sleeplessness, headache, dizziness, terrifying dreams, drowsiness, incoherent statements, dull comprehension, incontinence, misidentification and forgetfulness. Marked apprehensiveness is common and may be associated with hallucinations.

2. *Signs.*—These are most important from the standpoint of differentiation of acute symptomatic delirium from chronic delirium or the psychoses of dementia paralytica, cerebral arteriosclerosis, brain tumor or cerebral syphilis and the paranoic and paranoid delusional states.

In the acute deliriums associated with other organic illnesses or fevers the patient presents the symptoms due primarily to the basic disease. The typhoid patient, the pneumonia patient, the patient with septicemia all these show the usual signs of their illness and must be treated in accordance with the underlying disease. The phenomena of advanced heart or kidney disease, of marked disturbance of the autonomic nervous system or of metabolism—be this cachexia, acidosis, alkalosis or avitaminosis, e. g. pellagra—are evident to one who looks for them, as are the characteristic signs of drug intoxication, such as alcoholism, atropinism, bromism or barbiturate poisoning.

3. *Laboratory Observations.*—The clinical examination of the delirium patient should include not only routine procedures such as urinalysis and blood count but also spinal puncture to determine the nature and

tension of the cerebrospinal fluid and special tests for drugs when those are suspected of causing the condition.

The therapy may be discussed under the headings prophylactic and causal treatment, symptomatic treatment; hypohydration treatment in cerebral edema cases, e. g. delirium tremens, and psychotherapy.

PROPHYLACTIC AND CAUSAL TREATMENT

When one realizes the fact that intoxication and exhaustion in addition to hyperpyrexia are the underlying causes of delirium, it will readily be seen that the prophylactic and the causal therapy of delirium are identical. It includes chiefly the following items:

1. Prevent hyperpyrexia (see Fever Regimen) because high temperature no matter how induced tends to produce delirium.

2. Avoid increasing the toxicosis by giving deliriant drugs and those that may interfere with the proper nutrition of the brain. The latter liability is particularly great with bromide, which should be considered contraindicated in all grave nutritional disturbances of the cerebrum, such as the delirium occurring in the later stages of typhoid. The action of bromide may be visualized as due to the bromide ion going into partnership with the chloride ion and being able to serve, almost as well as the chloride, the nutritive functions of the body with the exception of its most sensitive tissue, the nervous system. This interference with nutrition is of little consequence to the nervous system of an individual in fairly good nutritional equilibrium—excepting that it lessens irritability—unless or until about 30 per cent of the body chloride is replaced by bromide, when symptoms of intoxication are likely to supervene. In the fever patient the intoxication threshold is lower. A blood bromide of 150 mg. per hundred cubic centimeters (Wuth test¹) may be regarded as the dangerous level, though even 75 mg. may be significant. Bromide intoxication manifests itself by drowsiness, poor memory, confusion, thick speech, ataxia, tremors and delirium. A rash (acne) may or may not be present. The symptoms may persist for weeks after the blood bromide has returned to normal.

As any one of the hypnotics is capable of acting as a deliriant when given in dose insufficient to produce sleep, one must either give no hypnotic at all or give enough to produce deep sleep.

When a patient is on the verge of delirium, it is best to stop all medicine excepting that indicated by the condition present.

3. Maintain correct fluid balance. Forcing fluid to "favor elimination" must be carried out with discretion and it is contraindicated when there is a tendency to cerebral edema. This indicates hypohydration therapy, which consists of limitation of fluid intake to 1,000 cc. for the twenty-four hours, dextrose phlebotomy of from 50 to 100 cc. of 50 per cent solution, which may be repeated every eight hours, and magnesium sulfate by mouth, 30 cc. of saturated solution. This regimen tends to prevent development of the "wet brain" found so frequently on necropsy of alcoholic addicts.

In cases then in which there is no excess of cerebrospinal pressure, one may give the patient all the fluid he will take by mouth or can retain. If this amount is inadequate to maintain liberal urinary elimination, phlebotomy (5 per cent dextrose solution) should be employed. The extent to which fluid should be forced needs to be guided by the way the kidneys respond to the appeal. As long as the quantity of the urine

1. Wuth, Otto: Rational Bromide Treatment: New Methods for Its Control, J. A. M. A. 88: 2013-2017 (June 25) 1927.

increases, elimination may be assumed to be improved. When this limit is exceeded the forcing of fluid does harm. It then causes edema, latent or manifest, including cerebral edema, which may produce delirium.

In bromide intoxication and in all conditions of hypochloridemia (q. v.) sodium chloride should be freely administered, but again only up to the point of making good the deficit and improving elimination. In bromide intoxication it is not advisable to push chloride at first or until after the blood bromide has fallen to 150 mg. per hundred cubic centimeters, as chloride administration temporarily increases the blood bromide concentration, while the elimination by the kidneys remains unaffected.

4. Maintain metabolic equilibrium to the best possible degree. This demands faithful feeding from the very inception of any serious illness. The diet must cover the most nourishment the patient can take care of. An alcoholic addict who vomits may be able to retain a cup of hot milk made "hotter" by 1 cc. of tincture of capsicum. The patient may possibly be able to take cereal gruels. It must be pointed out here that special attention should be given the administration of an abundance of vitamins, especially vitamins B and C, particularly for the alcoholic addict, as it is evident that chronic alcoholism produces subvitaminosis to the extent to which the abuse of liquor interferes with or is used as a substitute for vitamin-containing food.

The suggestion has been advanced that, in addition to a carbohydrate-high diet, from 5 to 10 units of insulin be given one hour before meals not only for improving the assimilation of the carbohydrate but also for its calming effect. One must watch the patient carefully to intercept by promptly giving sugar a hypoglycemia crisis (sweats, weakening of pulse, epileptoid attacks or increase in the delirium). Acidosis (q. v.) or alkalosis (q. v.) and hyperthyroidism (q. v.) require special management. If the hemoglobin percentage is below 50, blood transfusion is indicated.

5. Maintain optimum possible cardiorenal functions. For the indicated therapeutic tactics, should heart or kidney action be insufficient, reference must be made to the Therapy of Circulation Depression and to the Therapy of Uremia.

6. Secure an adequate amount of rest and sleep. When one realizes how exhausted a healthy person feels after even one sleepless night, it is easy to understand that it is nothing less than malpractice to permit a seriously ill patient to suffer from insomnia night after night. Sleep is as important as food in the survival period. Hence we must give our patients solicitous care to secure as much sleep as possible, day or night. The sleeping patient should not be awakened for the giving of medicines or any other treatment unless this is especially ordered by the physician. To awaken a patient for the morning toilet who, after a restless night, has at last fallen asleep (as is done in a routine manner in some hospitals) is the worst kind of nursing practice.

The measures to be used for the securing of sleep have been discussed under Therapy of Insomnia. Here it must be pointed out that a beginning delirium may possibly be aborted by a darkened room, a reassuring nurse and an ice cap plus, if necessary, an adequate dose of hypnotic such as paraldehyde 10 cc. in water by mouth or rectum. This regimen may prevent a prolonged and dangerous delirious state.

SYMPTOMATIC TREATMENT

Protection.—In all those conditions in which delirium is likely to occur, as in every alcoholic addict who is

starving from the exclusive use of liquor, from vomiting or from intercurrent disease, the physician should look for tremor, reflex disturbances, changes in the patient's mental grasp and orientation, and in his feelings and sensations. The forerunners of delirium are continued insomnia, taciturnity and apathy or loquacity and nervous irritability, suspiciousness, anxiety and muscle twitching. When any of these are discovered and even in the absence of hallucinations or delusions he should promptly institute appropriate measures to keep the patient from harming himself or those around him.

This requires constant nursing care. A delirious patient must not be left alone even for a minute, and nothing with which he can harm himself or others should be within his reach. The treatment should be directed at making the patient less fearful. An efficient, tactful nurse who is able to speak quietly and soothingly usually is able to do more to prevent excessive activity than physical restraints. The patient's senses, impaired as they are by the toxic state, are unable to record accurately the various stimuli from without, and thus illusions (which are mistaken impressions) occur. This is particularly true in the early morning and late evening hours when the changes in light make it more likely for illusions to be experienced. It is during these particular times that the patients become more easily frightened and as a result agitated and restless. An understanding and reassuring nurse who knows how to dispel these unreasonable fears will often quiet the patient far more than sedative medication.

When a patient is absolutely determined to get up, it is often much wiser to allow him to sit up or even rise for the moment and then with gentle persistence to lead him back to bed than to have him expend a great deal more energy by struggling against the restraining persons, sheets or straps. Patients become covered with perspiration, increase their temperature and become exhausted by such struggling, using more energy than they seem to possess. It is much less exhausting for such patients, when in their anxiety, if they are allowed to sit up or even get up for the moment until their weakness causes them to relax.

The windows of all rooms in which such patients are kept should be properly guarded, since accidental suicides are not uncommon among delirious patients. The doors must be barred, since such patients may run away even as they are in their night clothes. The ideal treatment for all delirious patients is their prompt transfer to the psychopathic department or to a ward properly equipped for the care of these temporarily psychopathic patients.

Hydrotherapy is of great value, especially for the alcoholic addict. The secret of its success lies not only in the specific soothing and relaxing effect of the warm water but also in the fact that the patient is comfortable while in the bath and uncomfortably chilly the moment he tries to get out of it. Sometimes an ordinary tub bath of warm (not hot) water (never over 100 F.) for half an hour will work wonders in quieting a patient. Still better is the prolonged or continuous neutral bath with water between 96 F. if there is fever and 98 F. if there is no fever. The temperature of the water should always be a little lower than the body temperature to allow for the escape of heat from the body. These tub baths should be tried as a rule before giving sedative medication, if the condition of the patient, e. g. surgical wounds, does not contraindicate it. The medicinal sedatives are substances foreign to the human body not entering into its anabolic processes. They are poisons which must be eliminated by the emunc-

tories overstrained by the poisons already present. Often medication actually aggravates the delirium. In properly equipped "continuous bath" tubs it is possible to keep a patient for eight hours or longer. In such baths the temperature must be constantly checked and recorded so as to avoid chilling or scalding. While the patient is in the tub he should have an ice bag on his head and be given frequent sips of water. The room should be darkened, warm and quiet.

Another useful form of hydrotherapy is the "cold wet pack." The patient is placed on a table and wrapped in a sheet which has just been wrung out in water of about 65 F. and immediately afterward wrapped in warm blankets outside the sheet. The sheet will absorb much of the body temperature and the reacting warmth often has a strong soothing effect. The covering blanket may be retained after half an hour or removed, always depending, as in everything else, on the thermic and circulation reaction of the patient.

Physical restraint should be avoided if it is at all possible to get along without it. The patient moves about and acts irrationally because of the disturbed condition of his brain. Restraint causes most individuals to become antagonistic and thus more agitated and it adds to their baseless fears and actually motivates them to further activity.

Where there is insufficient help a restraining sheet may have to be used, passed across the patient and wound around the bars of the bed. Side boards, well padded to avoid bruises, are often adequate for these restless persons. The wrist and ankle straps at present in general use in many hospitals are a relic of the barbarous past, necessary as long as adequate segregation and humane protection of these patients cannot otherwise be secured. Their employment should be abolished as soon as possible. They irk the patient so much that the first thing many of them shout to any one approaching is "Say, got a knife? Cut them straps!"

Sedative Medication.—Attempts are often made to quiet patients who are delirious with all sorts of medicine, yet nothing of value is usually accomplished. The harm that comes to a patient by yelling is little when compared with the possible toxic effect of a medication that may not only fail to quiet but may actually make the patient worse. In many hospitals there is no proper provision for such noisy persons and quiet must be obtained for the other patients present. Ice bags to the head, hydrotherapy and an intelligent nurse may be able to accomplish this. If this fails, sedatives may have to be resorted to. Their use, like that of physical restraints, then becomes a necessary evil.

If absolutely demanded by the patient's need of rest, hypnotic drugs should be given only for the night, when the patient is more apt to be disturbed, and they should be administered before darkness sets in, since the latter may increase the patient's disorientation and fear. The dose must be large enough to cause sleep, and a quick acting readily metabolized and eliminated drug should be chosen.

Paraldehyde meets these requirements more nearly than any other drug. The effects set in within ten to fifteen minutes and it does not depress heart and respiration. Its toxicity is so low that 100 Gm. merely produces very prolonged sleep. It is only when the patient is under the influence of an almost fatal dose of alcohol that its administration may be dangerous, as it acts in the same way as alcohol. Its chief disadvantage is the disagreeable odor and taste and its local irritative quality. The dose in delirium is from 10 to 15 cc. given

in ice water, tea or wine. Its taste is partly disguised by compound spirit of orange (prescription 1). It may be administered by rectum (prescription 2).

Amytal sodium may be given intravenously to patients who do not respond sufficiently well to paraldehyde. It should be injected at the rate of 0.1 Gm. a

PREScription 1.—Paraldehyde and Compound Spirit of Orange

R̄	Paraldehyde	40 cc.
	Compound spirit of orange.....	10 cc.

Tablespoon in iced tea to be followed by teaspoon doses hourly until patient is asleep.

PREScription 2.—Paraldehyde and Alcohol

R̄	Paraldehyde	40 cc.
	Alcohol	40 cc.

One fourth the quantity (20 cc.) in 100 cc. of physiologic solution of sodium chloride, to be given as retention enema. To be repeated in an hour if necessary, then every two to four hours as required.

minute and a dose of from 0.5 to 1 Gm. should not be exceeded. It is obtainable in ampules containing this quantity of the salt and accompanied by an ampule containing ten times the amount of sterile distilled water in which it is to be dissolved just before administration.

Should it be undesirable to administer either of these, one might consider the possibility of synergistic medication to obtain possibly maximal sedation with a minimum of undesirable side effects. It has been customary in this hospital to give a mixture the essential ingredients of which are Chloral Hydrate (0.3 Gm.) and Tincture of Hyoscyamus (0.05 cc.) with Morphine Sulfate (1 mg.) per dose. It may be doubted that the small dose of morphine adds anything to the effect of the medicine. There are many who consider morphine in sufficient dosage to quiet the patient distinctly dangerous to delirious patients, especially to alcoholic addicts, many of whom become excited by it. It is contraindicated in delirium tremens, as it tends to raise intracranial pressure. It increases reflex excitability, which is generally excessive in these patients. The

PREScription 3.—Compound Elixir of Chloral and Phenobarbital

R̄	Soluble saccharin	0.05 Gm.
	Chloral hydrate	6.00 Gm.
	Soluble phenobarbital	0.50 Gm.
	Fluidextract of hyoscyamus.....	2.00 cc.
	Elixir of eriodictyon (R. B. II).....	100.00 cc.

Tablespoon (15 cc.) in water as first dose, to be followed by hourly teaspoon dosage until the patient is asleep. (Hypnotic in delirium.)

combined use of morphine with barbiturate is especially to be avoided, as it may cause the patient to "forget to breathe" on account of summation of depressant action on the respiratory center. The elixir of chloral and phenobarbital (prescription 3) contains in each teaspoon one half the average official dose of each ingredient in a relatively palatable form. It might be given in tablespoon doses (15 cc.) in water to be followed by hourly teaspoon dosage until the desired effect is obtained.

HYPOHYDRATION TREATMENT
Hypohydration treatment is indicated for reduction of intracranial edema and excessive cerebrospinal fluid pressure occurring in delirium tremens as well as in some other forms of delirium. It includes:
1. Spinal drainage of from 50 to 75 cc. of fluid. This may be repeated after an interval of from six to twelve hours. The fluid must be permitted to escape very slowly.

2. Phleboclysis of sucrose solution 50 per cent; from 100 to 200 cc. or even 500 cc. may be repeated every six to twelve hours alternating with the spinal drainage.

3. Magnesium sulfate 60 cc. of a saturated solution should be given by mouth every morning.

4. Fluid should be limited to 1,000 cc. in the twenty-four hours with the most liberal possible supply of carbohydrate and vitamins.

5. Favor diuresis by caffeine with sodium benzoate 0.5 Gm. given intramuscularly every four hours as long as required. Digitalis and other cardiovascular stimulants may be given as indicated.

PSYCHOTHERAPY

If the delirium develops in a relatively nontoxic condition, one should study the patient's personality to prevent and ameliorate disturbing emotional factors. Many convalescences are prolonged when all traces of organic disease have gone and restorative processes should have been completed, simply because the patient has developed a neurasthenic syndrome precipitated by the physical illness and he is now activated by the disturbing emotions that were latent for a long period before the illness.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT. HOWARD A. CARTER, Secretary.

DRIFLASH ELECTRO-SURGICAL UNIT ACCEPTABLE

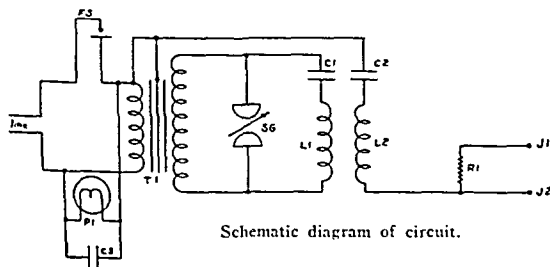
Manufacturer: General Automatic Corporation, Macedonia, Ohio.

The Model C-100 Driflash is a spark gap electrosurgical unit intended for desiccation and fulguration by the monopolar technic only. The unit is housed in a molded plastic case with a hanger so that it may be hung on the wall. A foot switch operates the unit, and a pilot light indicates when it is energized.

The following information was submitted by the firm: A high voltage transformer supplies 1,500 volts on an open circuit; the spark gap points are of tungsten; the coil assembly is wound on a fiber form; the condenser assembly is a copper mica assembly between aluminum castings. Two outlet jacks are provided. Both the condenser and the coil assembly are insulated for voltages at least five times higher than those actually encountered. The power output is approximately 10 watts.



Driflash Electro-Surgical Unit.



Schematic diagram of circuit.

In the advertising no therapeutic claims are made for the device other than that it is a suitable device for desiccation and fulguration. The Council's clinical investigation of the unit revealed that it gave satisfactory service.

Assuming that only treatment of small lesions of the skin is to be undertaken and that only monopolar technic is desired, the intensity of fulguration and desiccation is adequate for

practical purposes. The control whereby one can reduce the intensity from maximum power down to a point at which there is no effect seems quite even and satisfactory.

The Council on Physical Therapy voted to accept the Driflash for inclusion on its list of accepted devices.

Council on Pharmacy and Chemistry

REPORT OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS. PAUL NICHOLAS LEECH, Secretary.

HAZARDS OF BROMIDISM IN PROPRIETARY AND UNCONTROLLED HYPNOTIC MEDI- CATION: NEUROSINE (Dios Chemical Company) NOT ACCEPTABLE FOR N. N. R.

Lately the medical profession has been deluged with pamphlets extolling the value of bromides over the barbitol preparations. These pamphlets have been sent out by the Dios Chemical Company, promoters of "Neurosine." An introductory paragraph of one of the pamphlets states:

In prescribing sedative medication, the physician is faced with the problem of selecting the most suitable, yet safe, agent. Shall he choose one of the barbiturates, which though they have a powerful, prompt hypnotic effect, are known to be dangerous and with distinct tendencies toward inducing tolerance and addiction? Or, shall he rather choose a milder sedative of certain action, with decades of safe, effective clinical application, such as a tested combination of bromides with therapeutic adjuvants (Neurosine)?

The author of the article is stated to be Dr. Frederic Damrau, who makes his services available to quite a number of proprietary concerns. In view of this, the Council calls the attention of the medical profession again to the hazards of bromidism in their indiscriminate use in hypnotic medication.

In the consideration of the use of any drug there are two aspects of its toxic action that must be considered: first, the acute toxicity and, second and often more important, the chronic toxicity. The acute toxicity can be readily gaged by determination of the acutely fatal dose in animals and comparison of this with the dose necessary to bring about the desired pharmacologic action, thus obtaining the therapeutic index. With due allowance for species differences, these results may be applied to the use of the drug in man. Chronic toxicity may be due to either or both of two characteristics: first, to slow progressive damage to some organ or its function, because of a long continued maintenance of a concentration of the drug that would not produce irreversible changes in a short time and, second, to slow excretion or destruction of the drug, with the resultant attainment of a very high level in the body after prolonged administration. The bromides fall into the latter category, and it is because of this factor that their indiscriminate use such as in proprietary sedatives has led to so many cases of chronic bromide intoxication.

BLOOD BROMIDE AND INTOXICATION

The use of bromides as depressants of the central nervous system dates back a century, and it was not long after their introduction that the first case of intoxication was reported by Huette¹ in 1850. There followed reports of individual cases from time to time, but it was not until Wuth² called attention to the syndrome in 1927 and described his modification of the methods of determination of blood bromide previously described by Walter and Hauptmann that the subject was given adequate attention, and reports of the incidence of chronic bromide intoxication were forthcoming. Wuth reported elevated blood bromide values in 21 per cent of 238 patients admitted to the Henry Phipps Psychiatric Clinic, of whom 8 per cent showed clinical evidence of bromide intoxication. Probably the largest series of cases was reported by Wagner

1. Kamman, G. R.: *Minnesota Med.* 21: 484 (July) 1938.
2. Wuth, Otto: *Rational Bromide Treatment*, J. A. M. A. 88: 2013 (June 25) 1927.

and Bunbury, who found 7.7 per cent of patients admitted to the Colorado Psychopathic Hospital to have blood bromide concentrations above 75 mg. per hundred cubic centimeters, with 4.4 per cent showing symptoms of bromide intoxication. Hanes and Yates³ found that more than 700 patients admitted to Duke Hospital had elevated blood bromide concentrations, of whom 400 had had concentrations above 50 mg. per hundred cubic centimeters over a period of six and one-half years, during which time they represented 0.9 per cent of total admissions. Of 500 dispensary patients, 5.8 per cent had blood bromide concentrations above 50 mg. It is the opinion of these authors that 5 per cent of admissions to institutions are due to bromide intoxication.

BEHAVIOR OF BROMIDE IN THE BODY

In order to understand the high incidence of intoxication with this drug, one must consider briefly its behavior in the body. The bromide ion is readily absorbed from the stomach and intestine, to such an extent that even after the ingestion of large amounts very little is found in the feces. The absorbed bromide is capable of displacing chloride from the tissues, the amount so displaced depending on the relative amounts of the two halides ingested. Thus either an increase in bromide or a decrease in chloride ingested results in a rise in the bromide concentration in the tissues. Normally, the chloride concentration is maintained within fairly narrow limits, the absorption being balanced by urinary excretion. Because bromide is excreted more slowly than chloride, even though the amount of bromide ingested is inferior to the amount of chloride, bromide will gradually replace chloride in the tissues. It is estimated that for every gram of bromide ingested from 10 to 15 Gm. of chloride should be taken and that with this ratio there is little danger of cumulative toxicity.⁴ Replacement of 40 per cent of tissue chloride by bromide is stated by Bernouilli⁵ to be fatal and 30 per cent definitely toxic.

FACTORS IN BROMIDE TOXICITY

Thus it is seen that a number of factors other than the absolute dose of bromide are concerned in the possible development of bromide intoxication. A reduction of chloride in the diet is effective in increasing blood bromide concentration on a constant bromide intake, while kidney damage, by interfering with bromide excretion, may have the same effect. Added to this is the generally accepted fact that the threshold of toxicity varies greatly from one individual to another, much as is the case with alcohol. It may be stated that any blood bromide concentration above 150 mg. per hundred cubic centimeters carries with it the possibility of bromide intoxication, although cases have been reported in which as high a concentration as 380 mg. per hundred cubic centimeters was tolerated without untoward symptoms.

FALSE SENSE OF SECURITY IN LOW ACUTE TOXICITY

Probably the very low acute toxicity of bromide is responsible more than any other factor for the high incidence of bromide intoxication. The knowledge that very large single doses may be taken without other effect than the desired sedation has led to a false sense of security on the part of layman and physician alike in the prescribing of bromides, the name of which has become a household word synonymous with mild sedation. Nor has this dangerous sense of security been decreased by the publication in the medical literature⁶ and in the advertisements of certain drug firms⁷ of data emphasizing the low acute toxicity of bromides, without adequate consideration of their cumulative action.

A striking example of the latter type of publication is a pamphlet circulated by the Dios Chemical Company of St. Louis, advertising their product "Neurosine" entitled "Do Sedatives Harm the Brain," under the authorship of Frederic Damrau, copyright 1939. Probably the most objectionable phase of the claims made in this publication lies not in the

virtues attributed to "Neurosine" but rather in the lack of appreciation of the cumulative effects of continued bromide medication. Certain of the statements made are worthy of comment. Great stress is laid on the lack of acute toxicity of bromide, the statement of Cushny being quoted that "acute fatal poisoning has seldom or never occurred in man." In contrast to this, the whole subject of cumulative toxicity is disposed of in a short paragraph, the definite impression being given that the incidence of such toxic effects is negligible and the treatment simple and rapidly effective, than which nothing could be less true. Damrau further states "The bromides are never habit forming," yet cases of addiction to "Bromo-Seltzer" have been reported. Importance is attributed to animal experimentation, autopsies of the experimental animals being claimed which "failed to show any pathological changes of the brain, heart, lungs, kidneys or spleen." Yet a careful perusal of this work shows that only acute experiments were performed in which no opportunity for cumulative action was present. Nevertheless, in the next paragraph the indications for the administration of "Neurosine" include such essentially chronic conditions as "neurasthenia, hysteria, menopause neuroses, alcoholism, the insomnia habit, and epilepsy." The applications of "Neurosine" seem endless, as a later paragraph gives unqualified commendation for its use in Sydenham's chorea, habit spasms and exophthalmic goiter, but in all these conditions more specific treatment is certainly indicated. Superiority over barbituric acid derivatives is claimed on presentation of fragments of evidence, mostly original with Damrau, without adequate presentation of the other side of the case. Finally, a plea is made that "Neurosine" be prescribed because it is "strictly an ethical preparation," a plea which loses something in sincerity when it is remembered that the Dios Chemical Company goes to considerable trouble and expense to see that the preparation is dispensed in the original bottle, which has both the name "Neurosine" and the name of the firm blown into the glass, thus affording the patient an excellent opportunity for continued self administration of a potentially dangerous drug.

Furthermore, the stress placed on the undesirable features of barbiturates is out of all proportion in Damrau's discussion of the action of bromides. Every physician will agree that there are undesirable side actions of the barbiturates which are well understood and documented, but it is quite inappropriate in a discussion of sedative drugs to single out this particular group for condemnation while minimizing, or even ignoring, more or at least equally glaring faults in other groups of drugs, especially the bromides. Although the obvious purpose of advertisements is to sell the product advertised, such an attempt based on part information and misinformation is misleading to the profession and the public and should be condemned.

The recent legislation aimed quite justifiably at the indiscriminate sale of the barbiturates has resulted in increasing the equally undesirable indiscriminate and unhindered sale of preparations containing bromide. That ignorance regarding the potential danger of prolonged administration of bromide without adequate supervision is not restricted to the layman is eloquently attested by the number of patients referred to psychiatrists by physicians who have themselves administered bromides to a point of chronic intoxication which they failed to recognize. Furthermore, Tod and Stalker⁸ report three physicians admitted to Maudsley Hospital for bromide intoxication due to self medication. Is it, then, any wonder that the layman, unaware of the potential danger of the drug, having as a matter of common knowledge the impression that bromides are "good for the nerves" and having the choice of any number of attractively dispensed proprietary preparations which he may purchase with no more restriction than is placed on the sale of cosmetics, all too frequently finds himself ultimately in a psychiatric institution? Surely the remedy does not lie merely in the printing of the composition of the product on the label, for so far as bromides are concerned this is rather an added inducement for the buyer, but rather in placing similar restrictions on the sale of these preparations as have

3. Hanes, F. M., and Yates, Anne: *South. M. J.* **31**: 667 (June) 1938.
4. Barbour, R. F.: *Proc. Roy. Soc. Med.* **29**: 1391 (Sept.) 1936.
5. Bernouilli: *Arch. f. exper. Path. u. Pharmacol.* **73**: 355, 1913.
6. Damrau, Frederic: *M. Rec.* **144**: 239 (Sept. 2) 1936.
7. Damrau, Frederic: *Do Sedatives Harm the Brain?* St. Louis, Dios Chemical Co., 1939.

8. Tod, Henry, and Stalker, Harry: *Edinburgh M. J.* **45**: 561 (Aug.) 1938.

already been placed on the sale of the barbiturates. Finally, the education of the medical profession to the proper use and control of bromide medication is important.

PROPER CONTROL OF BROMIDE MEDICATION

Although there is some divergence of opinion as to the relative value of bromide in the treatment of epilepsy, since the advent of phenobarbital and dilantin sodium, the drug is undoubtedly effective in certain cases and probably deserves some usage in this condition. It is a useful adjunct to the therapeutic armamentarium also as a mild sedative in certain neuropsychiatric conditions. Nor need its use be unduly hazardous if its potentialities for cumulative toxicity are borne in mind and adequate precautions are taken. These precautions consist essentially in a control of the level of the bromide concentration of the blood, endeavoring to attain the desired therapeutic result with as low a concentration as possible, and absolutely avoiding concentrations higher than 125 to 150 mg. per hundred cubic centimeters. The determination of bromide concentration of the blood by the method described by Wuth² is simple and rapid and the apparatus required is inexpensive. Therefore, it is not unreasonable to ask that, if the physician is not willing to undertake the slight effort and inconvenience required to follow the blood bromide concentration, he should eschew the prescription of the drug entirely and confine himself to such sedative drugs as have been proved to be relatively noncumulative. If bromides are prescribed, the pharmacist should be advised not to refill the prescription without an order to do so, thus avoiding the danger of the patient's continuing the medication without supervision. If these precautions are adhered to, there is no reason why therapeutic use of this sedative should result in bromide intoxication.

MANIFESTATIONS OF BROMIDE INTOXICATION

As to the manifestations of bromide poisoning, suffice it to say that any organic reaction type may be simulated. However, in the majority of cases there are the signs of a toxic delirium, with retardation of thought, slurred speech, ataxia, tremulousness of the hands and disturbances of attention and memory. Hallucinations may occur, but frank hallucinosis is uncommon. Paranoid delusions are not infrequently seen. The presence of a pustular acneform eruption may aid in the diagnosis but is more frequently absent than present. Indeed, there seems to be no relation between the threshold for the dermatologic and neurologic manifestations of bromide toxicity. A history of ingestion of bromides is frequently very difficult to obtain, so that determination of the blood bromide concentration is the most reliable diagnostic measure.

TREATMENT OF BROMIDE INTOXICATION

Treatment consists first and foremost of abrupt cessation of bromide intake, with substitution of other sedatives only when restlessness cannot be controlled by such physical therapeutic measures as packs and tubs. Fluid intake should be kept up, parenterally if necessary. Diuretics are ineffectual in expediting excretion by the kidneys; the amount which can be eliminated by the bowels does not justify the drastic use of cathartics. The administration of sodium chloride in dosage of from 6 to 12 Gm. daily is effective in more rapidly displacing the bromide from the tissues. However, it is said by Strecker and Ebaugh⁹ that the displacement may take place more rapidly than does elimination by the kidneys, with a resultant temporary rise in blood bromide concentration, and therefore these authors believe that this procedure should not be instituted too rapidly. This must be borne in mind in giving parenteral fluids. Since a liter of physiologic solution of sodium chloride contains 9 Gm. of sodium chloride, dextrose is probably preferable, while the blood bromide concentration remains very high. The fact that in the presence of a large amount of bromide in the tissues a considerable proportion of the gastric acidity is due to hydrobromic acid,¹⁰ which normally is reabsorbed in the intestine, opens another avenue for the elimination of bromide. Toenhart¹¹ was successful in

removing 5 Gm. of bromide by repeated aspiration of the gastric contents over a period of six days from a patient with an initial blood bromide concentration of 300 mg. per hundred cubic centimeters, with clinical recovery in this period. This is a considerable improvement over the two or three week period necessary with salt therapy only. The application of the Wangenstein technic of continuous suction probably would be still more effective. It is difficult to conceive how the removal of but 5 Gm. of bromide from a patient with a blood bromide content of 300 mg. per hundred cubic centimeters would be clinically effective. There must have been approximately 21 Gm. of bromide in the blood alone, and since the tissues contain on an average about one third the concentration of the blood, almost 200 Gm. more in the rest of the body. Then the removal of 5 Gm. of bromide represented a reduction of but 4 per cent of the total bromide content of the body. Obviously, more knowledge of the distribution and excretion of bromide is necessary for a full evaluation of this mode of treatment.

SUMMARY

Bromide therapy should not be attempted without careful control of the dosage both of bromide and of salt, so that the blood bromide concentration is not allowed to rise above the 125 to 150 mg. per hundred cubic centimeter level, which is the maximum safe therapeutic concentration. Care should be taken that the patient is not allowed to continue bromide medication without supervision. Blood bromide determinations should be carried out on all patients manifesting evidence of symptoms of the organic reaction type, such as confusion or delirium, and appropriate therapeutic measures instituted if toxic concentrations of bromide are found.

The Council reaffirmed its action of many years ago declaring "Neurosine" unacceptable for inclusion in New and Non-official Remedies because it is a mixture containing bromides sold under a proprietary name with unwarranted therapeutic claims.

HEMOLYTIC STREPTOCOCCUS ANTITOXIN- GLOBULIN-LEDERLE-MODIFIED NOT ACCEPTABLE FOR N. N. R.

The Lederle Laboratories, Inc., presented this product for the Council's consideration as a combination of hemolytic streptococcus antitoxins of broad valence identified as scarlet fever streptococcus antitoxin and erysipelas streptococcus antitoxin. The product was proposed for use in the treatment of severe and toxic cases of beta-hemolytic streptococcus infections, alone or as combined treatment using sulfanilamide for puerperal fever, erysipelas, septic sore throat, cellulitis and streptococcal pneumonia.

In the Council's consideration of the material presented, especially the advertising, question was raised as to the specificity of toxins of various strains of streptococci. It was pointed out that this was a controversial problem and that, while the firm had presented credible data to indicate that the preparation is apparently a combination of scarlet fever streptococcus antitoxin and erysipelas streptococcus antitoxin, it had presented no clinical evidence that hemolytic streptococcus antitoxin will be of great value in any streptococcal infection except scarlet fever.

Various passages in the advertising submitted by the firm were criticized and recommended to be deleted on account of the foregoing. It appears unnecessary to specify these passages from the advertising in this report. The following comment by a Council member sums up this consideration:

It seems probable that when current work on the hemolytic streptococcus matures the biologic treatment of streptococcal disease will have to be considered in a somewhat new light. Meanwhile it seems unfortunate to discuss questions which are still in the experimental stage with such finality as is done in the Lederle booklet on Hemolytic Streptococcus Antitoxin.

In view of the objections raised and of the fact that Lederle Laboratories, Inc., has not presented adequate clinical evidence to substantiate its claims, the Council declared Hemolytic Streptococcus Antitoxin-Globulin-Lederle-Modified unacceptable for inclusion in New and Nonofficial Remedies.

9. Strecker, E. A., and Ebaugh, F. G.: *Practical Clinical Psychiatry*, ed. 3, Philadelphia, P. Blakiston's Son & Co., 1931, p. 195.

10. Chatagnon, Camille: *Presse méd.* 45: 659 (May 1) 1937.

11. Toenhart, O. E.: *Wisconsin M. J.* 34: 901 (Dec.) 1935.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, SEPTEMBER 14, 1940

THE PLATFORM OF THE AMERICAN MEDICAL ASSOCIATION

The American Medical Association advocates:

1. The establishment of an agency of the federal government under which shall be coordinated and administered all medical and health functions of the federal government exclusive of those of the Army and Navy.

2. The allotment of such funds as the Congress may make available to any state in actual need, for the prevention of disease, the promotion of health and the care of the sick on proof of such need.

3. The principle that the care of the public health and the provision of medical service to the sick is primarily a local responsibility.

4. The development of a mechanism for meeting the needs of expansion of preventive medical services with local determination of needs and local control of administration.

5. The extension of medical care for the indigent and the medically indigent with local determination of needs and local control of administration.

6. In the extension of medical services to all the people, the utmost utilization of qualified medical and hospital facilities already established.

7. The continued development of the private practice of medicine, subject to such changes as may be necessary to maintain the quality of medical services and to increase their availability.

8. Expansion of public health and medical services consistent with the American system of democracy.

THE PHYSICIAN AND THE DRAFT

The selective service act—usually called the conscription bill—has passed the House of Representatives and the Senate and now goes to the Conference Committee for final decision on certain differences. No doubt by the end of the week this act will have been passed by both houses and will have been signed by the President. Immediately, no doubt, in the individual states some thousands of draft boards or exemption boards will be established, with each of which there will be associated a physician. Physicians are already being asked in many states to volunteer for service with these boards. It has been suggested that they will be willing to contribute their services now as so many thousands of them did in 1917-1918. At that time arrangements were made to pay on a per diem basis for the services of physicians only in counties where physicians could not be found to contribute the services. We have no record of any such counties.

The duty of the physician associated with the draft board is one of the utmost importance in relationship to securing a proper personnel for military service. On the physician rests the major part of the responsibility of deciding promptly whether claims for exemption on account of physical disability are just. Considering the fact that the physician associated with such a board is a resident in the district over which he has jurisdiction, the physician is not in an enviable position. He must hear the pleas not only of his friends and neighbors but also of his patients. To resist such importunities requires common honesty of purpose and a courage to do one's duty which is fundamental in the character of every good physician. No doubt he will be called on to detect malingering, perhaps to pass on certificates from family physicians and specialists certifying to disabilities which he will have to verify. The duties of physicians on these boards require not only honesty of purpose and courage to do right, even at the sacrifice of private practice, but also professional alertness to detect malingering and misrepresentation.

It has been rather generally understood that the physicians on the draft boards will make only a preliminary survey of the candidates who come before them. Those selected will then be sent to special examining boards, which will be later constituted by the Army Medical Department. On these physical examining boards will rest the final decision as to whether or not the young man is to go to camp. These boards will be located in centers of population, preferably near military posts or stations, and will include eleven medical officers and one dental officer. More complete information relative to the establishment, perquisites and duties of these boards will be published later.

In 1918, it will be remembered by many physicians, each draft board bore a relationship to a medical advisory board on which were placed the duties which now will be placed on the physical examining boards. It was found in 1918 that an average of 8.1 per cent of those examined were rejected for physical defects which were not picked up by the physical examiners of the local draft boards. This represented a total of 172,000 men between Feb. 10, 1916, and Oct. 31, 1918. These men were transported at government expense; in some instances they claimed aggravation of existing disabilities during travel from their homes to the military camps. The purpose of the new technic is to eliminate to a certain extent the number of men who are ordered into service and subsequently have to be rejected, and to eliminate as far as possible the responsibility of the government to individuals who will be without military value. Thus it is apparent that again a great burden and a great responsibility are to be placed on the physicians of our country.

American physicians have never failed in the past to meet such a call. The members of the Committee on Medical Preparedness, who have been authorized by

the House of Delegates to cooperate with government officials in securing physicians for required services, have promised with confidence that the medical profession is ready and willing to do its part.

BROMIDES IN MEDICINE

The use of bromides as sedatives has been known for almost a hundred years. Although the first case of intoxication was reported soon after the initiation of this therapy, many believed that the administration of bromides caused little, if any, more deleterious effects than those following the use of chlorides. More recently bromide intoxication has become so prevalent that there is no longer any question that the various bromide preparations possess distinctive effects, especially on the central nervous system. A recent report¹ published in *THE JOURNAL* plainly indicates the frequency with which undesirable effects result from bromide administration. Although the condition appears to be common, physicians may fail to recognize bromide intoxication. There may be, then, a much higher incidence of toxicity than is generally recorded. A frequent cause of intoxication is continued self medication by patients using prescriptions issued by physicians to alleviate the chronic suffering of the alcoholic addict or psychoneurotic individual. This should constitute an ample warning against any desire for casually prescribing a bromide preparation for headaches, insomnia, restlessness or so-called nervousness without cautioning patients about "follow-up" visits.

Pharmacologically the bromides have, among other factors, one important action: Intake of the slowly eliminated bromides results in the elimination of the more rapidly excreted chlorides from the body, which is a decisive factor in the production of intoxication. Sleep is induced by causing decreased interest and sensitivity to disturbing influences or stimuli. Since the sleep is often not deep or refreshing, the patient may awaken feeling unrefreshed and showing evidence of mental confusion which may persist for several hours after waking.

The blood bromide concentration can be simply and inexpensively determined. A bromide content of the blood even as low as 50 mg. per hundred cubic centimeters of blood may in some persons result in mild nervous manifestations. Continued use may cause a chronic manifestation of intoxication often called "bromism," a syndrome which may show cutaneous eruptions, disturbances of digestion, disturbances of sensation or mental upsets.

Because of lack of restrictions on "over the counter" sale of the bromides there has been in the past little difficulty in the public obtaining them. One precaution, due to the new Food, Drug and Cosmetic Law, provides that drug labeling must carry "adequate directions for use" and "adequate warnings." The following label has

been suggested as an example, to be suitable for preparations containing bromides sold. "over the counter" without a physician's prescription and which are considered to be so dangerous with careless use that they should be sold only on a doctor's prescription:

Warning: Frequent or continued use may lead to mental derangement, skin eruptions or other serious effects.

Do not take more than the dosage recommended.

Not to be taken by those suffering from kidney disease.

The Washington bureau has released information explaining the attitude of the Food and Drug Administration in connection with the dosage of bromides. It is the belief of the administration that bromides may be considered dangerous drugs under section 502 (j) of the act if an equivalent to 15 grains (1 Gm.) of sodium bromide is taken in a single dose or if the total daily dosage is equivalent to 30 grains (2 Gm.) with an interval of not less than three hours between single doses. These restrictions do not, of course, apply to prescriptions issued by physicians.

Elsewhere in *THE JOURNAL* is a report² of the Council on Pharmacy and Chemistry on the hazards of bromides, particularly in proprietary medicaments. Although the mortality from bromide intoxication is relatively low, probably less than 1 per cent, recovery from symptoms of poisoning may require from one to six weeks. The bromides have played an important part in therapeutics, especially in the management of epilepsy, but because of adverse effects neurologists have often questioned whether or not the harmful effects from the bromides might overshadow their good. In the latter part of 1938 a group of manufacturers' representatives met in Washington to discuss a common attitude toward certain analgesic and sedative drugs, the bromides being included. As a result of this meeting an organization was established to investigate certain properties and to review the existing literature. The group later implied that many existing impressions were based on false interpretations and that death or intoxication resulting from the use of bromides was so rare that great difficulty was found in estimating the accuracy of the records. These representatives of a group of manufacturers had, of course, a common interest in commercial preparations which included the bromides.

In the hands of the average physician, sodium or potassium bromide is a useful remedy. Competent physicians recognize their value and the side reactions, but the public must be forewarned against self medication induced either by refilling of prescriptions without the authority of the physician or by the use of the bromide-containing mixtures on the market represented by such compounds as the well known type of acetanilid-bromide effervescent mixtures.

Bromide intoxication does vary with the individual. One person may take rather large quantities of bromide

1. Gundry, L. P.: Bromide Intoxication, *J. A. M. A.* 113: 466 (Aug. 5) 1939.

2. Hazards of Bromidism in Proprietary and Uncontrolled Hypnotic Medication: Neurosine (Dios Chemical Company) Not Acceptable for N. N. R., this issue, p. 933.

over a period of time with relatively little accumulation in the blood stream while another person may take relatively small quantities over the same period with large accumulation. Continued intake of significant quantities of bromides over indefinite periods inevitably leads to accumulation of bromides in the blood stream. Individuals may therefore be afflicted with symptoms of bromide intoxication from frank bromide poisoning to the intangible symptoms of irritability, tendency to dizziness, confusedness and vagueness of thinking. Other symptoms which have been reported include inability to concentrate, loss of ambition and interest in work and surroundings, hallucinations, disorientation and suicidal or homicidal impulses. The latter symptoms are all a part of the bromide psychosis.

In this day, when the emotional strains are already impinging to an alarming extent on the consciousness of the public in general, it is high time that society protected itself against the use of those preparations which may contribute to an alarming increase in various forms of mental upsets or even insanity. There is no need for hysteria over the unwarranted use of preparations containing potentially dangerous ingredients, but there is need for restricted self medication. With the conscientious and combined efforts of physicians, pharmacists and pharmaceutical manufacturers, such an aim can easily be achieved.

Current Comment

SCIENTIFIC COLLABORATION

Up to the immediate past, as pointed out recently in a leading article¹ in *Nature*, scientific collaboration has not been confined to the so-called democracies but has embraced all civilized countries. By the intensification of totalitarian policy, international scientific cooperation has been adversely affected. Indeed on several occasions international conferences of both medical and general scientific nature have been postponed or canceled. This has had the effect of forcing men of science of free countries into closer collaboration, as exemplified by the inauguration in 1938 of the British and American Association Lecture, sponsored by the respective Associations for the Advancement of Science. The discussion also discloses the fact that recently a strong group of French scientific workers was inquiring into the possibility of publishing periodically in *Nature* articles contributed by French men of science in the French language—a suggestion which was apparently viewed favorably by the editors of that journal. The comprehensive scheme for collaboration by means of the centralization of scientific knowledge developed by a French group and established by the French government's Centre national de la recherche scientifique called a Service de documentation under the direction of Prof. Pierre Auger was also discussed. This service initiated the publication of an analytic bulletin containing titles or short abstracts of papers published in the

chief journals on chemistry, physics, applied chemistry, technical physics, biochemistry and some branches of biology. Extensive use was to be made of microfilms, and bibliographies of special subjects were to be made by assembling sections of microfilm. The preliminary aspects of the service were limited to France, Great Britain and the dominions and colonies. According to *Nature*, during its brief life it received valuable aid from the Science Library in London. At the time of writing the article the plight of this service was unknown.

GARBAGE DISPOSAL AND TRICHINOSIS

Trichinosis is probably a greater problem in the United States than in any other country in the world.¹ Until comparatively recently the relatively high incidence of trichinosis in various population groups of the United States was not commonly appreciated. That garbage-fed swine are especially important as sources of human trichinosis has been repeatedly emphasized.² Scraps of pork are commonly present in garbage and up to 5 per cent of these scraps, including trimmings and other discards from butcher shops, hotels, homes and elsewhere, have been reported to contain live trichinae. Years ago it was observed that garbage-fed hogs exhibited a high incidence of trichinae, whereas swine raised on pasture or fed on cooked meat and corn either were free from trichinae or exhibited a low incidence of trichinosis. Recent studies indicate that geographic areas in which many hogs are raised on garbage are the areas having the most clinical trichinosis.³ Inquiries addressed to health officers in 964 cities brought out that the hog-feeding method of garbage disposal is the most common method practiced in these municipalities, although, of course, other methods of disposal, including incineration, fill and cover, and reduction, are to a lesser extent also used.³ Large numbers of hogs fed on uncooked municipally collected garbage are marketed each year, and trichinous pork from these hogs, in cases in which the meat is packed in uninspected packing plants, may even be incorporated in products customarily eaten raw by the consumer. According to Wright the results of this survey indicate that American municipalities, either directly or indirectly, are probably the largest feeders of raw garbage to swine and, consequently, these communities would appear to be chiefly responsible for the dissemination of trichinosis. This serious indictment implies that the municipalities themselves are contributing to the ill health of their own citizens; as long as our cities and towns continue to contribute to the spread of trichinosis they will constitute a serious deterrent to the control of this disease. Since hogs fed on uncooked garbage probably represent the chief source of human trichinosis, a more rigorous control of garbage feeding should be established. This can be done through regulations which provide for the licensing and supervision of garbage feeding plants, and for the cooking of garbage for a period sufficient to destroy all trichinae.²

1. Hall, M. C.: Studies on Trichinosis, Pub. Health Rep. 52: 873 (July 2) 1937.

2. Wright, W. H.: Studies on Trichinosis, Am. J. Pub. Health 20: 119 (Feb.) 1939.

3. Wright, W. H.: Studies on Trichinosis, Pub. Health Rep. 55: 1069 (June 14) 1940.

MEDICAL PREPAREDNESS

In this section of The Journal each week will appear official notices by the Committee on Medical Preparedness of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medical preparedness, and such other information and announcements as will be useful to the medical profession.

PROGRESS OF MEDICAL PREPAREDNESS STUDY

The Second Fifty Per Cent

On September 6 the Committee on Medical Preparedness had received 93,437 schedules from physicians throughout the United States and its outlying territories. This number represents 52 per cent of the 179,796 schedules which were mailed to physicians in July.

The response of physicians in different states showed a wide variation, from 83.2 per cent in Nebraska and 85.8 per cent in the Canal Zone to 38.5 per cent in New Mexico and 0.08 per cent in the Philippine Islands. Thirty-eight states showed more than 50 per cent of questionnaires returned.

By Corps Areas the percentage of returns was, on August 30, as follows:

First Corps Area.—Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont: 13,567 schedules mailed; 6,958, or 51.3 per cent, returned.

Second Corps Area.—Delaware, New Jersey, New York: 33,355 schedules mailed; 17,653, or 52.9 per cent, returned.

Third Corps Area.—District of Columbia, Maryland, Pennsylvania, Virginia: 21,543 schedules mailed; 10,639, or 49.4 per cent, returned.

Fourth Corps Area.—Alabama, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee: 18,148 schedules mailed; 9,012, or 49.7 per cent, returned.

Fifth Corps Area.—Indiana, Kentucky, Ohio, West Virginia: 18,100 schedules mailed; 9,892, or 54.7 per cent, returned.

Sixth Corps Area.—Illinois, Michigan, Wisconsin: 22,176 schedules mailed; 11,561, or 52.1 per cent, returned.

Seventh Corps Area.—Arkansas, Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota: 18,341 schedules mailed; 11,846, or 64.6 per cent, returned.

Eighth Corps Area.—Arizona, Colorado, New Mexico, Oklahoma, Texas: 12,270 schedules mailed; 5,911, or 48.2 per cent, returned.

Ninth Corps Area.—Alaska, California, Idaho, Montana, Nevada, Oregon, Utah, Washington, Wyoming: 17,495 schedules mailed; 9,385, or 53.6 per cent, returned.

Canal Zone.—134 schedules mailed; 115, or 85.8 per cent, returned.

Hawaii.—472 schedules mailed; 194, or 41.1 per cent, returned.

Philippine Islands.—3,695 schedules mailed; 3, or 0.08 per cent, returned.

Puerto Rico.—486 schedules mailed; 264, or 54.3 per cent, returned.

Virgin Islands.—14 schedules mailed; 4, or 28.6 per cent, returned.

Now that the vacation season is nearing its close, some physicians may be expected to return the schedules which have been awaiting their return.

Changes of address should be reported promptly to the Directory Department of the American Medical Association so that the Committee on Medical Preparedness can supply schedules to physicians who could not be reached on the first mailing.

The first 50 per cent of returns represents a prompt and willing response from the physicians in all parts of the nation. It is earnestly hoped that the second 50 per cent will respond without delay.

U. S. CIVIL SERVICE COMMISSION APPEALS FOR 600 CIVILIAN MEDICAL OFFICERS

In connection with the immediate authorized expansion of the Army, there is need for 600 civilian medical officers for temporary or part-time service. The duties assigned to them will be performed later by commissioned officers of the Army Medical Corps if and when such officers are called to active duty. Appointees will not receive commissions in the Army as a result of their temporary or part-time service. The United States Civil Service Commission has prepared a questionnaire and is seeking to ascertain names of physicians in the United States available for these positions and to secure acceptances from them. Applications must be on file with the commission's Washington office not later than October 1 if received from states east of Colorado and not later than October 4 if received from Colorado and states westward. The salaries for the positions concerned will be from \$3,800 to \$4,600 a year, subject to a retirement reduction of 3.5 per cent. The work is largely in the field of industrial medicine. Application blanks may be secured by addressing the United States Civil Service Commission, Washington, D. C., requesting form 2398a, August 1940, covering application for Civilian Medical Officers, Temporary and Part-Time Service.

PROPOSED STUDY OF WARTIME DISEASES

The American Red Cross and Harvard University announced, August 18, the proposed establishment of a 100 bed hospital in England for the study and treatment of communicable diseases under wartime conditions, according to the *New York Times*. Announcement was also made of the formation of a new Harvard public health unit for field and laboratory work in epidemiology in Great Britain. The hospital, to be known as the American Red Cross-Harvard Hospital, will be constructed and financed by the American Red Cross. Harvard will furnish the medical staff of the hospital and assume responsibility for the scientific work. The purpose of the joint undertaking in addition to fulfilling an urgent need in England will be to acquire valuable information both relating to the control of epidemics under unusual or wartime conditions and to the organization of temporary mobile hospitals under similar conditions.

The work of the Harvard unit already has begun with the arrival in London of Drs. John E. Gordon and John R. Mote, professor of and assistant in preventive medicine and epidemiology in the medical school, respectively. The Red Cross will furnish the structure and equipment of a temporary or hut type of hospital, to be fabricated in this country, transported to England and set up there on foundations provided by the British Ministry of Health. It will also furnish the nursing and nonprofessional members of the staff and certain supplies for its operation. The Harvard unit will fur-

nish the medical staff of the hospital, Dr. Gordon to serve as its director under appointment from the Red Cross as well as director of the Harvard unit.

The Red Cross will be responsible for the general management of the hospital. Dr. Gordon and the superintendent of the hospital, to be appointed by the Red Cross in consultation with Dr. Gordon, will report to the Red Cross on matters of general management. On scientific and clinical phases of the hospital work in addition to laboratory and field work of the Harvard unit, Dr. Gordon will be responsible to and report to Harvard University.

PHILADELPHIA'S PREPAREDNESS PLANS

The *Weekly Roster and Medical Digest*, official bulletin of the Philadelphia County Medical Society, has established a medical preparedness section for the information of its members on military matters. The society's committee on medical economics is at work on measures to safeguard the practice of physicians called to military service and to pay them part of the fees collected from their practice during their absence. The committee is also trying to arrange some method whereby physicians on their return from service will be restored to whatever teaching, hospital, governmental and industrial positions they held when called away.

A questionnaire similar to that distributed by the American Medical Association has been prepared by the society in order that the society may have in its own files information it may be called on to give to military authorities. The questionnaire is being mailed to nonmembers as well as members of the society.

The county society has also offered its services to the state director of selective service in the selection of medical members of local draft boards under the selective service law.

The subjects of coming lectures in the course on medical preparedness which the society is presenting, in addition to those previously announced will be:

October 3, Concentrations of Civilian Personnel for Military Service—Epidemiological Aspects, Contagious and Venereal Disease Problems.

October 10, Expected Psychiatric Problems in a Mobilization.

October 17, Tissue Reaction to Missiles of War—Ballistics, The Surgery of War as Contrasted with Industrial Surgery.

Dr. James B. Mason, co-chairman of the National Defense Committee and chairman of the speakers' bureau, made a radio talk, September 2, on "The Philadelphia Doctor and Medical Preparedness."

MEDICAL PILOTS

Medical Pilots, a group in which membership is available to all white male American citizens who are licensed practitioners of medicine and members of their local medical society, was organized in southern California in June. Officers include Drs. Phillip Ross Sutherland, Los Angeles, president; Bartlett C. Shackford, Long Beach, vice president, and Colby Hall, Los Angeles, secretary. An active member in the group must have an active private pilot's rating or a higher rating. Associate members must have a solo rating. At a meeting in the Hollywood Athletic Club, Hollywood, September 5, Ensign Moulton Taylor discussed aviation radio and flying instruments in general.

Organization Section

WHAT SHALL WE TEACH?

Fourth annual symposium sponsored by the Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association in cooperation with the A. M. A. Sections on Ophthalmology, Pediatrics, Laryngology, Otology and Rhinology, and Preventive and Industrial Medicine and Public Health, Tuesday, June 11, 1940, Hotel Roosevelt, New York.

I. H. GOLDBERGER, M.D., Assistant Director of Health Education, Board of Education, New York City, Presiding

DR. GOLDBERGER: The presence here today of about seven hundred teachers is due to the action of the Board of Superintendents, who granted these health specialists a half-day holiday for the purpose of participating in the proceedings of this symposium. It is hoped that the papers which we shall hear this afternoon and the discussion that will follow will help to contribute to the study, planning and improvement of school health programs and thus pave the way to progress in improving the health of children and of the communities in which they live.

I. THE BUREAU OF THE CENSUS REVEALS HEALTH PROBLEMS

HALBERT L. DUNN, M.D.
Chief, Division of Vital Statistics, Bureau of the Census,
U. S. Department of Commerce
WASHINGTON, D. C.

Recently the Bureau of the Census has begun to modernize its educational approaches to the public. A portion of its data deals with the facts of birth, death and population. To a lesser extent fertility data, marriage and divorce statistics, facts about criminals, judicial decisions, insanity and hospitals are also of interest to health departments. Yet these data have remained essentially unused by the majority of American people. Four years ago the Division of Vital Statistics of the Bureau of the Census began the serious study of adapting the materials under its jurisdiction to the needs of public health. In some instances we have played an active role in attempting to understand the other person's point of view rather than passively waiting for him to ask questions. In the campaigns for more complete birth registration we have studied the interests of entire communities. We have become acquainted whenever possible with the leaders of community organizations. We have then remodeled stereotyped talks on birth registration and recast them in the language of the persons who are members of organizations representing vital forces in local communities.

Thus two steps are being taken by the division in adapting material under its jurisdiction to the needs of public health: the adoption of a philosophy of service and the study of the interests of others.

A third step, of great value, is publication in "small packages." The ordinary person finds statistics peculiarly difficult to assimilate in anything but small packages. This consideration gave birth four and a half years ago to the "Vital Statistics—Special Report Series."

Many special projects are planned which will supplement public health needs, including:

1. Restoration of marriage and divorce statistics.
2. Extension of knowledge on mental and feeble-minded institutionalized patients.
3. Collection of facts concerning hospitals and other institutions where people die.
4. Computation of three year death rates.
5. Calculation of time trends for principal causes of deaths.
6. Special data and studies on fatal accidents.
7. A nationwide county by county test of the completeness of birth registration.

Mimeographed copies of complete papers and discussion will be sent gratis by the Bureau of Health Education to persons professionally interested in health education.

8. Studies on birth rates and infant mortality in terms of the social economic factors.

9. Special monographic studies on certain causes of death. Four page county summaries will consolidate all important facts and there will be approximately 3,000 such releases.

II. THE COLLEGE HEALTH SURVEY REVEALS CERTAIN NEEDS OF THE LOWER SCHOOLS

RUTH E. BOYNTON, M.D.

Director, Students' Health Service, University of Minnesota
MINNEAPOLIS

The effectiveness of a health education program is usually measured by either an increase in health knowledge or an improvement in health habits of individuals exposed to health education. It is extremely important for all in health work to work together on a program which will have continuity and progression.

The evaluation of health knowledge of college students may be done in two ways: (1) by attempting to discover by the use of so-called health knowledge tests how well informed they are in health matters and what attitudes toward health they have developed, and (2) by determining from physical examination and health history the health status of the individual.

Of the 4,545 new students at the University of Minnesota examined in the fall of 1938-1939, according to their health histories 98 per cent were thought to have an adequate diet and good eating habits. Ninety-three per cent obtained from seven and one-half to eight hours of sleep. Approximately 77 per cent of the men and 58 per cent of the women engaged in no extracurricular activities. About 15 per cent took no form of physical exercise. About 40 per cent had been immunized against diphtheria; 85 per cent had been successfully vaccinated against smallpox. Twenty-five per cent of the women and 9 per cent of the men were 10 per cent or more underweight; 17 per cent had an A posture and 21 per cent had a posture designated as C or worse. Sixty-seven per cent had moderate or excessive dental caries; 76 per cent had normal vision.

Results of health knowledge tests given university students are indications of the need for improved health teaching in the lower schools. They reflect the need for an extension and improvement in health teaching in all the schools.

Correct health knowledge is a first step toward better health practices. The desire to practice better health habits is the ingredient needed. Health instructors must find some way to develop an interest in better health habits.

Studies showing the lack of health knowledge of students should stimulate expansion in our health program and give encouragement to the providing of a continuous, well organized and progressive curriculum in health from kindergarten through college.

III. RELATIONSHIPS BETWEEN HEALTH EXAMINATION AND HEALTH EDUCATION

CHARLES C. WILSON, M.D.

Director of Physical and Health Education, Board of Education
HARTFORD, CONN.

Health education is not medical education; it is education which the layman needs to promote his own health and to cooperate in maintaining and promoting the health of his community. The health examination is one means of determining individual health needs or health problems. The recognition of unmet health needs should be followed by a planned program of education and guidance, initiated by the school medical adviser and continued by the teacher and school nurse. Acquaint the pupil and his parents with the significance of conditions found and the advantage of treatment. Personal health problems can be helped by educational efforts of teachers and nurses. These educational efforts relating to health needs, as revealed by health examinations, should aim to teach (1) the importance of preventive measures and of securing

attention for remediable defects and abnormalities, (2) the dangers and limitations of self diagnosis and self treatment, (3) where treatment is to be secured and (4) the necessity of each individual's assuming some responsibility for his own health care.

Health education should be related to life rather than be a learning of abstract words and ideas. Individual health guidance and group health instruction can be based, in part, on the problems revealed by health examinations.

Suitable facilities are a prerequisite for examinations which will have desirable educational results. Schools must provide attractive health guidance rooms permitting privacy during examinations and conferences. The health examination should be a pleasant experience and its educational outcome requires that a study be made of school health procedures. There should be opportunity for the physician to explain his observations and recommendations. With histories, with facilities for privacy and with adequate time the physician can conduct health education conferences rather than hurried, superficial inspections.

IV. THE INTERESTS OF CHILDREN VERSUS DICTA OF EXPERTS AS BASES FOR HEALTH INSTRUCTION

DOROTHY B. NYSWANDER, PH.D.

Director, School Health Study Committee
ASTORIA, N. Y.

Experts in the field of public health, private practice and education have succeeded in changing old attitudes toward health and in creating new attitudes as to how people should think and behave when confronted by health problems.

The health educator in the schools has recourse only to the experts who have said that certain facts were important and that undoubtedly teaching them must bring values in their wake. Thus the health educator leaves himself wide open to criticisms by educational psychologists who have for years been exploring not only what children need to learn in arithmetic, spelling and reading but how children learn these subjects. The teaching of health has been a stepchild of the classroom teacher. Without the results of research to guide her comparable to that for the three R's, she has had little help on what to teach or how to teach the facts, attitudes and habits involved in healthful living.

The beginning and end of the learning process is the child himself. Experts often fail to recognize this. Too often the expert thinks of what he wants to accomplish and forgets that it is the child who has to reach goals of his own choosing. Health educators must integrate the information needs and dynamic interests of the child through worth while life experiences.

Our courses of study in school health resemble too much the emphases which we are using in adult health education programs. They have been built around health or disease entities rather than around children's interests. Certain subjects may be of interest to the experts but do they have meaning or interest to children? For young children health is a series of specific knowledge and attitudes but these should be taught in connection with real projects of living and planning and thinking so that generalizations will emerge from these specific learning activities at a later period.

The sounder education becomes in its principles of teaching, the less costly may be the education of the adults in the community. And it is to the furthering of research in methods and technics of education in the schools that we now need to turn.

DISCUSSION

DR. RUTH M. BAKWIN, New York: Health examinations cannot be done *en masse*. The number of children per hour which most school physicians are expected to examine leaves the results meaningless. A health examination is the most difficult type of examination and the medical profession is not yet prepared to make a good health examination. Emphasis in the school should be on health education instead of on exam-

ination. Education is the instrument of a democracy, and with information available in this field better national health may be expected.

IRA V. HISCOCK, Sc.D., New Haven, Conn.: After decisions have been reached as to What to Teach and How to Teach, we need to consider how the process is to become dynamic and vital in a given community. The task may be embraced by giving emphasis to complexity, critical evaluation, clarity, content, concentration, curriculum, continuity, calendar, coordination, cooperation and cost.

REV. WILLIAM R. KELLY, New York: Inconsistency between knowledge and practice may be called the moral problem of health education. Our aim should be for a greater measure of consistency between health knowledge and practice on the part of pupils, teachers and all concerned with the health program.

DR. HARRY E. KLEINSCHMIDT, New York: We who undertake to teach must determine skilfully and precisely what should be taught and what may well be left out of the curriculum. What is the good of expert teaching technic if what we teach is pointless, unsound or incomplete? The most important thing to teach is that intangible something we call attitude. It is the scientific approach we are trying to cultivate. Out of a mass of technical knowledge we must select those particular elements which, if learned and assimilated, will lessen the drag of sickness and make life sweeter.

DR. GEORGE M. LYON, Huntington, W. Va.: Our health education plans must be simplified as much as possible. Controversial issues must be presented in a sensible manner and all the practices and teachings must be consistent with recognized possibilities and limitations; otherwise the school health education programs cannot be educationally sound or socially desirable.

DR. DEAN F. SMILEY, Ithaca, N. Y.: It is important that we give each child a systematic logical knowledge of his body so that when unexpected health problems arise in his after-school years he will have a sufficient number of scientific facts and principles in the back of his mind to make his problem solving easier and more nearly correct. I would argue, therefore, for both a student interest approach and a logical or systematic approach in health education.

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Change in Status.—H. R. 10132, the Wadsworth conscription bill, has passed the House. Section 3 of the bill provides, in part, that in case of any person who during the year 1940 entered on attendance for the academic year 1940-1941 (1) at any college or university which grants a degree in arts or science, to pursue a course of instruction satisfactory completion of which is prescribed by such college or university as a prerequisite to either class of such degrees or (2) at any university described in 1 to pursue a course of instruction to the pursuit of which a degree in arts or science is prescribed by such university as a prerequisite, if, during his attendance at such college or university while pursuing such course of instruction, such person is selected for service and training prior to the end of such academic year, or prior to July 1, 1941, whichever occurs first, his induction into the land or naval forces shall, on his request, be deferred until the end of such academic year, but in no event later than July 1, 1941. During a discussion of this particular section on the floor of the House the question was raised as to whether or not the exemption in favor of students applied to those in attendance at medical schools. Representative May, Kentucky, who was in charge of the bill, answered the question in the affirmative.

Bill Introduced.—H. R. 10484, introduced by Representative McCormack, Massachusetts, provides that no individual who is licensed to practice medicine under the laws of any state, territory or the District of Columbia shall be ineligible for appointment, or for examination, as a medical officer in the active or reserve components of the military or naval forces of the United States solely by reason of any rating or classification of the medical school from which such individual was graduated.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Appointments to State Health Board.—Drs. Amos Christie and Charles E. Smith, San Francisco, have been appointed members of the state board of health. They succeed Drs. Howard Morrow and William R. P. Clark, both of San Francisco, who resigned when the headquarters of the board were moved from San Francisco to Los Angeles, it was reported.

Society News.—Dr. Arthur Carol McKenney Jr. discussed "Medical Aspects of Fundus Examination" before the San Francisco County Medical Society, September 10, and Drs. Samuel D. Aiken and George S. Campion gave a description of fundi with colored photographs. All are of San Francisco. —The Los Angeles County Medical Association will devote a general meeting, September 19, to a discussion on "The Medical and Religious Rights of the American Citizen Under Increasing Government Control." The speakers will include representatives of medicine and of different religious faiths.

DISTRICT OF COLUMBIA

Annual Scientific Assembly.—The Medical Society of the District of Columbia will hold its annual scientific assembly, October 15-17. The theme this year will be cardiovascular-renal disease.

The Kober Lecture.—John R. Mohler, D.V.M., chief of the bureau of animal industry, U. S. Department of Agriculture, Washington, has been chosen Kober lecturer for 1941 under the rules governing an endowment fund established by the late Dr. George M. Kober. Dr. Mohler will deliver the lecture, March 28, on "Undulant Fever," under the auspices of Georgetown University. Dr. Kober stipulated, among other things, that a lecturer, to whom an award would be given, was to be chosen every third year by an executive board representing the Washington Academy of Sciences, the National Tuberculosis Association, the Anthropological Society of Washington and the Medical Society of the District of Columbia. Dr. Mohler received his degree of doctor of veterinary medicine from the University of Pennsylvania in 1896. He has been awarded many honorary degrees, is a member of several scientific societies and was president of the American Veterinary Medical Association in 1913.

ILLINOIS

District Meeting.—The fall meeting of the Iowa and Illinois Central District Medical Association will be held at the Le Claire Hotel in Moline, September 18. The speakers will be Drs. Earl B. Ritchie, Davenport, Iowa, who will present "A Short Résumé on Industrial Dermatoses," and Percy S. Pelouze, Philadelphia, "Gonococcal Infections and Sulfonamide Compounds."

Personal.—Dr. Seymour Fisher, recently medical director of the Soldiers' and Sailors' Children's School Hospital, Normal, has been appointed superintendent of the division for handicapped children in the Illinois State Department of Public Welfare, Springfield. He succeeds Dr. Paul H. Harmon, now of Sayre, Pa., who resigned late in 1939. Dr. Sol Paul Ditkowsky, Chicago, was appointed pediatrician at the Normal institution to succeed Dr. Fisher.

Schools Closed.—Poliomyelitis Suspected.—The elementary and high schools of the city of Virginia in Cass County have been closed for two weeks because five children in the community were ill with what was thought to be poliomyelitis, according to the Chicago Tribune, September 10. The report stated that the illness in three of the five children had been definitely diagnosed as infantile paralysis and that the other two were suspected cases.

INDIANA

Memorial Tablet to Pioneer Physicians.—A bronze tablet erected to the memory of pioneer physicians of Clay County was dedicated, July 28, with John G. Benson, D.D., Indianapolis, as the principal speaker. The tablet has been placed in the Clay County hospital, Brazil, by the county medical society.

Retiring Dean Honored.—The Monroe County Medical Society held a dinner meeting in honor of Dr. Burton D. Myers, July 10, to mark his retirement as dean of the Indiana University School of Medicine at Bloomington. Dr. Myers had been dean of the Bloomington school since 1927. He joined the faculty in 1903 as professor of anatomy, becoming assistant dean in 1920. He retired, July 1, having reached the university's retirement age of 70 years. At the dinner Dr. Myers was presented with a life membership in the Monroe County Medical Society and speakers included Dr. Karl R. Ruddell, Indianapolis, president, state medical association; Herman B. Wells, LL.D., president of Indiana University; William Lowe Bryan, L.H.D., president emeritus of Indiana University; Attorney George Henley and Mr. Thomas A. Hendricks, executive secretary of the state medical association.

Short Courses in Tuberculosis.—The Indiana Tuberculosis Association is offering short courses in tuberculosis to practicing physicians. An afternoon and evening will be devoted to each course, which covers recent progress in treatment. The following sanatoriums have been selected as teaching centers:

Indiana State Sanatorium, Rockville, September 24.
Boehne Tuberculosis Hospital, Evansville, October 8.
James O. Parramore Hospital, Crown Point, October 10.
Smith-Esteb Memorial Hospital, Richmond, October 10.
Irene Byron Sanatorium, Fort Wayne, October 15.
Sunnyside Sanatorium, Indianapolis, October 16.
Healthwin Hospital, South Bend, October 22.
Hillcrest Tuberculosis Hospital, Vincennes, October 22.
"Silvercrest" Southern Indiana Tuberculosis Hospital, New Albany, October 23.
William Ross Sanatorium, LaFayette, November 12.

Further information may be obtained from the association at 1219 Security Trust Building, Indianapolis.

KANSAS

Changes in State Health Staff.—Dr. Richard F. Boyd, assistant director of child hygiene, state department of health, Topeka, has been appointed director of local health, a position left vacant since the death of Dr. Rolla B. Stafford. Dr. Paul R. Ensign, Sparta, Ga., has resigned as director of the child health demonstration in Hancock County to become assistant director of child hygiene succeeding Dr. Boyd.

Annual Registration Due Between July 1 and October 1.—Physicians licensed to practice medicine in Kansas are required to renew their licenses annually between July 1 and October 1 and to pay a fee of \$1 to the secretary of the board of medical registration and examination. The secretary must strike from the register of licensed physicians the names of all physicians who fail to pay their annual registration fees as required by law. Physicians whose names are so removed may be reinstated by paying the secretary \$5 and submitting to him satisfactory proof of moral fitness.

KENTUCKY

Institute on Psychiatry.—The second regional postgraduate institute of the American Psychiatric Association will be held at the Central State Hospital, Lakeland, September 23 to October 5, in cooperation with the division of hospitals and mental hygiene. The lecturers will include Drs. Oskar Diethelm and Severo E. Barrera, New York; Edward G. Billings and Franklin G. Ebaugh, Denver; Maurice Levine, Cincinnati; S. Spafford Ackerly, Louisville; Joseph G. Wilson and John D. Reichard, Lexington; Lawrence Kolb, U. S. Public Health Service, Washington, D. C., and Lieuen M. Rogers, U. S. Public Health Service, Springfield, Mo. Dr. Ebaugh is chairman of the committee on psychiatry in medical education of the American Psychiatric Association, which is sponsoring the series of institutes. The first was held at the Agnews State Hospital, Agnew, Calif., in June.

Society News.—The Christian County Medical Society honored Dr. Austin Bell, Hopkinsville, who is president-elect of the Kentucky State Medical Association, at a meeting in Hopkinsville, July 16, attended by 200 physicians from western Kentucky. Speakers were Drs. Arthur T. McCormack, Louisville, secretary of the state association, and John H. Blackburn, Bowling Green.—Drs. Philip F. Barbour and John Keller Mack, Louisville, addressed the Graves County Medical Society, Mayfield, July 17, on diarrhea and tuberculosis, respectively.—At a meeting of the Nelson County Medical Society in Bardstown, August 8, the speakers were Drs. James Murray Kinsman, on "New Treatments of Pneumonia"; Maurice G. Buckles, "Bronchoscopy in Diagnosis and Treatment of Chest Diseases," and Harry S. Andrews, "Treatment of Diarrhea in Children." All are of Louisville.

LOUISIANA

Tri-State Medical Meeting.—The thirty-fifth annual meeting of the Tri-State Medical Society will be held at the Washington-Youree Hotel, Shreveport, September 25-26, with the Shreveport Medical Society acting as host. The speakers will include:

Dr. Horace W. Boggs, Shreveport, Sulfathiazole—Clinical Application and Toxicity.
Dr. Roy R. Kracke, Emory University, Ga., Toxic Effects of Drugs on the Blood.
Dr. Robert K. Womack, Longview, Texas, Dysuria in the Female.
Dr. Louis F. Knoepf, Shreveport, Problems Concerning Some of the Indications for Chest Surgery.
Dr. Ralph H. Riggs, Shreveport, Bronchoscopy in Pulmonary Disease.
Drs. James K. Howles and Charles B. Kennedy, New Orleans, Diagnosis and Treatment of the Common Skin Diseases.
Dr. George W. Parson, Texarkana, Ark., Interesting Cases of Tularemia.
Dr. Arthur Neal Owens, New Orleans, A Consideration of the Treatment of Burns.
Dr. Robert W. Cooper, Shreveport, Use of X-Ray Therapy in the Treatment of Gas Bacillus Infection.
Dr. Silas C. Fulmer, Little Rock, Ark., Diagnosis of Heart Disease.
Dr. Joseph B. Wharton Jr., El Dorado, Ark., Pontocaine in Spinal Anesthesia.
Dr. Marvin T. Green, Ruston, Nonmalignant Conditions of the Breast.
Dr. Charles S. Sentell, Minden, Management of Acute Abdominal Emergencies.
Dr. Homer E. Prince, Houston, Texas, Asthma—Practical Considerations.
Dr. John A. Hendrick Jr., Shreveport, Present Status of Transurethral Prostatic Resection.

Dr. William H. Browning, Shreveport, will deliver his presidential address Thursday afternoon. The Tri-State Society is composed of physicians of Texas, Arkansas and Louisiana.

MISSISSIPPI

New Health Units.—A health unit has been established in Tishomingo County with Dr. William R. Armstrong in charge and headquarters in Iuka. A district health unit comprising Jasper and Smith counties has been organized with offices at Raleigh and Bay Springs. The department is under the direction of Dr. William F. Bell, Bay Springs. Dr. Sidney J. Williams, Livingston, health officer of Sumter County in Alabama, has been appointed director of the Commonwealth Fund health unit in Pike County, effective August 1.

MISSOURI

Annual Clinical Conference.—The Kansas City Southwest Clinical Society will hold its eighteenth annual clinical conference, September 30 to October 3, in the Little Theatre of the Municipal Auditorium, Kansas City. Guest speakers will include:

Dr. Harvey B. Stone, Baltimore, Intestinal Obstruction.
Dr. Ira R. Sisk, Madison, Wis., Chronic Prostatitis.
Dr. John T. King, Baltimore, Relation Between Coronary Disease and Hypertension.
Dr. Roscoe R. Graham, Toronto, Principle of Decompression and Defunctioning in Diseases of the Colon.
Dr. Fred M. Drennan, Chicago, Diagnosis and Interpretation of Clinical Findings in Peptic Ulcer.
Dr. Quitman U. Newell, St. Louis, Radiation Therapy in Gynecology.
Dr. Thomas Fitz-Hugh Jr., Philadelphia, Interrelationship of Cholelithiasis and Coronary Artery Disease.
Dr. Elliott C. Cutler, Boston, Management of Cerebral Trauma.
Dr. Leo H. Garland, San Francisco, Diagnosis and Treatment of Bronchogenic Carcinoma.
Dr. John Alexander, Ann Arbor, Mich., An Evaluation of Thoracoplasty and Extrapleural Pneumothorax in the Management of Cavernous Pulmonary Tuberculosis.
Dr. Willis C. Campbell, Memphis, Tenn., Ununited Fractures of the Neck of the Femur.
Dr. James S. McLester, Birmingham, Ala., The Part Played by the Vitamins in Human Metabolism.
Dr. James G. Carr, Chicago, Prognosis in Cardiac Disease.
Dr. Jesse Bedford Sheldahl, Dallas, Texas, Rules to Follow in the Treatment of Urticaria.
Dr. Luther Emmett Holt Jr., Baltimore, Newer Points of View in the Pathogenesis and Treatment of Infantile Eczema.
Dr. Arthur M. Alden, St. Louis, Neck Infections of Dental Origin.
Dr. Charles A. Bohn, New Orleans, Nutritional Eye Diseases.
Dr. Clifford J. Barborika, Chicago, Management and Treatment of Obesity.

A panel discussion on the anemias will be held in the ballroom of the Hotel President Monday evening and one on the heart Tuesday evening.

NEBRASKA

Personal.—Dr. Leland C. Albertson, formerly assistant superintendent of the Hospital for the Tuberculous, Kearney, has been appointed medical director following the resignation of Dr. Lawrence T. Sidwell.—Dr. Frederick R. Whittlesey, associate professor of medicine at the University of West Virginia School of Medicine, Morgantown, has been appointed director of the dispensary and coordinator of clinics at the University of Nebraska College of Medicine, Omaha.

Annual Registration Due On or Before October 1.—Physicians licensed to practice medicine in Nebraska are required by law to register with the Department of Public Welfare annually on or before October 1 and to pay a fee of \$1. A license expires if the licensee fails to register, but within the thirty days next following its expiration it may be revived by the payment of the registration fee and a penalty of \$1. If that is not done, an order of revocation is issued and thereafter the revoked license can be reinstated only on the recommendation of the board of examiners in medicine and on the payment of the renewal fees and penalty then due.

NEW HAMPSHIRE

Pediatric Meeting.—The New Hampshire Pediatric Society held its summer meeting in Manchester, August 30. Drs. John F. McCreary, Boston, and Simon Stone, Manchester, discussed uses of vitamin A and therapy of muscular dystrophy with vitamin E, respectively. Drs. MacLean J. Gill and Ursula G. Sanders, Concord, were elected president and secretary, respectively.

NEW YORK

Septic Sore Throat Traced to Raw Milk.—An explosive outbreak of septic sore throat in the village of Waddington, St. Lawrence County, in July was traced to raw milk from one dairy, *Health News* reports. Thirty-five persons were affected. The milker at the dairy gave a history of tonsillitis shortly before the outbreak. Two cases of mastitis were found in the cows, though the disease did not appear to be caused by the streptococci which belong to the group commonly encountered in human infections.

New Regional Society.—The Western New York Surgical Association was organized at a meeting at the Niagara Falls Country Club, August 8. Officers elected included Drs. Henry N. Kenwell, Buffalo, president; Donald P. Ross, Niagara Falls, and Harold A. Blaisdell, Jamestown, vice presidents, and John A. Post, Buffalo, secretary. The association stated its purpose to be "the cultivation, promotion and diffusion of knowledge of the art and science of surgery in its various departments, to sponsor and maintain the highest standard of practice in Western New York, to hold professional and social meetings and to publish transactions."

New York City

Hospital News.—A new dispensary unit of the department of hospitals was dedicated on Welfare Island recently. It will be associated with City, Manhattan and Welfare hospitals, located on the island, and will replace two old dispensaries. —Dr. Robert K. Lambert has been appointed attending surgeon in charge of the ophthalmologic service of Montefiore Hospital for Chronic Diseases.

Award to Dr. Goldwater.—Dr. Sigismund S. Goldwater, commissioner of hospitals of New York, has been selected to receive the 1940 Award of Merit of the American Hospital Association at its annual meeting in Boston, September 16-20. Dr. Goldwater has been a leader in the hospital field for many years. He graduated from University and Bellevue Hospital Medical College in 1901 and was superintendent of Mount Sinai Hospital from 1903 to 1916 and director from 1917 to 1929. From 1914 to 1916 he was health commissioner of New York. Dr. Goldwater was president of the American Hospital Association in 1908 and of the American Conference on Hospital Service from 1924 to 1926. Recently he was elected president of the Associated Hospital Service of Greater New York.

Lillian Wald Dies.—Miss Lillian D. Wald, founder of the Henry Street Settlement and of the first nonsectarian public health nursing system in the world, died September 1 at her home in Westport, Conn., aged 73. She resigned in 1933 as head of the famous settlement which she established in a tenement room in 1893; in 1937 she gave up the presidency of the board of directors. Miss Wald was active in the fight against child labor and in campaigns for better housing, children's playgrounds, school nursing programs and numerous other welfare projects. She was awarded the gold medal of the National Institute of Social Sciences, the Rotary Club's medal and the Better Times medal for distinguished social service. She wrote "The House on Henry Street," published in 1915, and "Windows on Henry Street" in 1934. On her seventieth birthday, March 10, 1937, at a public gathering in New York she received a distinguished service certificate of the city of New York from Mayor LaGuardia and was congratulated by President Roosevelt, Governor Lehman and others.

NORTH CAROLINA

Head of Anatomy Department Appointed.—Wesley C. George, Ph.D., professor of histology and embryology at the University of North Carolina School of Medicine, Chapel Hill, has been appointed head of the department of anatomy at the school. He succeeds the late Dr. Charles S. Mangum. Dr. George graduated from the university in 1911 and after several years of teaching took his doctorate in 1917. After service during the World War he taught at the University of Georgia and the University of Tennessee before returning to North Carolina in 1920 as associate professor of histology and embryology. He became a full professor in 1924.

Society News.—Elmer V. McCollum, Ph.D., Baltimore, addressed the Buncombe County Medical Society, Asheville, September 3, on "Contributions of Medical Science to Medicine."—At a meeting of the Mecklenburg County Medical Society, Charlotte, September 3, the speakers were Drs. Thomas D. Sparrow, on "Rationale of the Treatment of Goiter"; Otto B. Ross, "X-Ray Treatment of the Thyroid," and William Marvin Scruggs, "Total Obliteration of the Thyroid in Heart Disease."—Dr. Angus M. McBryde, Durham, addressed a joint meeting of the Alamance-Caswell Counties medical and dental societies in Burlington, August 13, on "Problems in Pediatrics."

OHIO

District Meeting.—The annual meeting of the Fifth Council District of the Ohio State Medical Association was held in Ashtabula, September 11. Dr. John E. Rauschkolb discussed "Ohio Medical Service Plans and Enabling Act," and speakers on the scientific program were Drs. Glen Keith Folger on "Treatment of Dysmenorrhea"; William C. McCally, "Surgical Drainage"; Curtis F. Garvin, "Chemotherapy of Streptococcal Infections"; Harold Feil, "Treatment of the Acute Heart Attack," and Robert F. Parker, "Modern Treatment of Pneumonia." All are from Cleveland.

Activities of State Medical Board.—The State Medical Board of Ohio reports the following recent results of prosecution for violations of the medical practice act, among others:

M. N. Ellis, Columbus, an unlicensed naturopath, was found guilty of "advertising and practicing" and fined \$150 and costs.

C. J. Williams, Cincinnati, an unlicensed naturopath, pleaded guilty and was fined \$100 and costs.

Isadore Silverman, unlicensed practitioner of Cuyahoga County, fined \$25 and costs.

Frank A. Miller, Medina, fined \$25 and costs.

Spafford Williams, Cleveland, fined \$50 and costs.

Olive Martin, Columbus, unlicensed chiropractor, placed on probation.

C. M. Leo, Columbus, unlicensed practitioner, fined \$100 and costs.

A. J. Mintz, Dayton, illegal practitioner, fined \$50 and costs.

S. M. Langstaff, unlicensed chiropractor of Madison County, fined \$100 and costs.

H. R. Reaver, Cincinnati, unlicensed chiropractor, fined \$50 and costs.

W. C. DeBenis, Cincinnati, unlicensed chiropractor, fined \$50 and costs.

James R. Monroe, Toledo, unlicensed osteopath, sentenced to one year in the workhouse. This sentence was suspended on condition that Monroe leave the state.

PENNSYLVANIA

District Meeting.—The annual meeting of the Second Council District of the Medical Society of the State of Pennsylvania was held in Quakertown, September 12, with the following speakers: Drs. Clay Ray Murray, New York, on "Diagnosis and Treatment of Fractures of the Wrist and Elbow"; Francis F. Borzell, Philadelphia, president-elect of the state society, "Is Professional Independence Essential to National Health?"; Charles-Francis Long, Philadelphia, chairman of the state society committee on industrial health, "The Present Status of Industrial Medicine in Pennsylvania" and Chauncey L. Palmer, Pittsburgh, chairman of the committee on public health legislation, "New Health Legislation and the Practicing Physician." Fifty year testimonials were presented to Drs. Martin J. Backenstoe, Emmaus; Clarence S. Kurtz, Malvern; George F. Potteiger, Hamburg, and James T. Taylor, Pomeroy.

Pittsburgh

Incidence of Cancer in Allegheny County.—The U. S. Public Health Service recently issued results of a study of cancer in Pittsburgh and Allegheny County, the third area to be studied in a sampling survey of the incidence of the disease in the United States. A total of 6,103 patients with cancer were reported as under medical care during the year 1937. More than 50 per cent of the cases were reported by only 0.3 per cent of the physicians and 16 per cent of the hospitals. About half the physicians and hospitals saw no cases of cancer during the year. Eighteen per cent of all the cases reported were in persons under 45 years of age.

Grant for Biochemistry.—The John and Mary R. Markle Foundation has made a grant of \$3,000 to the University of Pittsburgh in support of an investigation of the biochemistry of bone marrow with special reference to the development of red blood cells. Richard H. McCoy, Ph.D., recently a member of the staff of the Wistar Institute of Anatomy, Philadelphia, has been appointed research fellow to work on the project in association with Max O. Schultze, Ph.D., research fellow in chemistry on a Buhl Foundation grant. The work, which will be carried on under the direction of Charles G. King, Ph.D., professor of chemistry, represents an outgrowth of earlier studies on the biochemistry of copper.

TEXAS

Memorial to Dr. Rawlings.—A new \$20,000 health center building was presented to the city of El Paso, August 11, by Mr. and Mrs. Charles Stewart Mott, Flint, Mich., as a memorial to Mrs. Mott's father, the late Dr. Junius A. Rawlings, who practiced in El Paso for many years. Dr. Thomas J. McCamant, former health officer of El Paso, paid tribute to Dr. Rawlings; Mrs. Mott made the formal presentation and Mayor Anderson accepted the keys to the building. Other speakers were Drs. Lyman T. Cox, city and county health officer; Simeon H. Newman, president of the board of health, and Miss Refugio Carreon, public health nurse. Dr. Rawlings died in 1936.

Society News.—The Texas Hospital Association has changed the place of its annual meeting for 1941 from the Hotel Galvez, Galveston, to the Hotel Adolphus, Dallas. The meeting will be held from February 27 to March 1.—At a meeting of the Big Bend Medical Society in Marfa, August 13, the speakers included Drs. Preston Hunt, Texarkana, president of the Texas State Medical Association, on "The Relation of the Medical Profession to the Present Political Set-Up"; Leopold H. Reeves, Fort Worth, "The Romance of Southern Medicine"; and Neil D. Buie, Marlin, president-elect of the state association, "The American Medical Association Platform."—Dr. Harris Hosen, Port Arthur, addressed the Jefferson County Medical Society, Port Arthur, August 12, on "Therapy in Respiratory Allergy."—Dr. Curtice Rosser, Dallas, addressed the Lamar County Medical Society, Paris, July 11, on "Management of Common Rectal Diseases."

WISCONSIN

New Milwaukee Health Officials.—Dr. Edward R. Krumbiegel, director of the bureaus of contagious diseases and school hygiene in the Milwaukee department of health since 1936, has been appointed health commissioner to succeed Dr. John P. Koehler, who resigned to seek the Republican nomination for United States Senator. Dr. Krumbiegel graduated from Marquette University School of Medicine in 1935. Dr. Errol V. Brumbaugh, deputy health commissioner for many years, retired to private life, August 15. Dr. Gerald F. Burgardt, Milwaukee, succeeded Dr. Brumbaugh.

District Meetings.—Speakers at a recent meeting of the Sixth Councilor District of the State Medical Society of Wisconsin in Fond du Lac were Dr. James Howard Johnson, Milwaukee, on "Fractures of the Hand" and the following from Chicago: Drs. Herbert E. Schmitz on "Carcinoma of the Cervix"; George O'Brien, "Coronary Heart Disease"; Jacob P. Greenhill, "Endocrinology in Obstetrics and Gynecology"; and Charles Marshall Davison, "Acute Disease of the Abdomen."—At a meeting of the Ninth Councilor District in Marshfield, July 11, the guest speakers were Drs. Walter C. Alvarez, Rochester, Minn., and Walter M. Kearns, Milwaukee, on problems in gastro-enterology and urology, respectively.—Speakers before the Fifth Councilor District in Manitowoc recently were Drs. Doris F. Hopkins, Chicago, on "Allergy in General Medicine"; Raymond J. Jackman, Rochester, Minn., "Anorectal Disease"; Richard C. Adams, Rochester, "Anesthesia in Proctology"; and Elmer L. Sevringhaus, Madison, on "Office Management of Diabetes." At an evening banquet Drs. Raymond G. Arveson, Frederic, president of the state society, and Eben J. Carey, Milwaukee, made addresses.

WYOMING

State Medical Election.—Dr. Roscoe H. Reeve, Casper, was named president-elect of the Wyoming State Medical Society at the annual meeting at Sheridan, August 11-13, and Dr. Peter M. Schunk, Sheridan, became president. Dr. Donald G. MacLeod, Jackson, was elected vice president and Drs. Marshall C. Keith and Frederick L. Beck, both of Cheyenne, were reelected secretary and treasurer, respectively.

PUERTO RICO

Inter-American Institute for Hospital Administrators.—Plans for an Inter-American Institute for Hospital Administrators to be held in San Juan, December 1-14, have been announced. The institute will be sponsored by the American College of Hospital Administrators, the University of Puerto Rico, the School of Tropical Medicine, the Puerto Rico Medical Association, the Puerto Rico Health Department, the Hospital Council of Puerto Rico and the Territorial Charity Board of Puerto Rico. It is planned to have lectures and discussions at the morning sessions, demonstrations in the hospitals in the afternoons and round table conferences in the evenings. Members of the executive committee, all of San Juan, are:

Juan B. Soto, Ph.D., chancellor of the University of Puerto Rico, San Juan, president of the committee.

Dr. Eduardo Garrido Morales, San Juan, commissioner of health of Puerto Rico.

George W. Bachman, Ph.D., director of the School of Tropical Medicine, San Juan.

Dr. Oscar Costa Mandry, San Juan, president, Puerto Rico Medical Association.

Dr. Leopoldo Figueroa, San Juan, president of the Territorial Charity Board.

Dr. Ramón M. Suárez, San Juan, president of the Board of Medical Examiners.

Dr. Felix Lamela, San Juan, president of the Puerto Rico Hospital Council.

Dr. Ramón H. Señeriz, acting director of the Bayamón District Hospital, Bayamón.

Mr. Robert Boyd, administrator of the Presbyterian Hospital, San Juan.

Information about the institute may be obtained from Mr. Lamela, executive secretary of the School of Tropical Medicine, San Juan, or from Mr. Gerhard Hartman, American College of Hospital Administrators, 18 East Division Street, Chicago.

GENERAL

Meeting of Railway Surgeons.—The fifty-first annual meeting of the American Association of Railway Surgeons will be held at the Palmer House, Chicago, September 16-18, under the presidency of Dr. Leonard A. Ensminger, Indianapolis. Among the speakers will be:

Dr. John Albert Key, St. Louis, Local Use of Sulfanilamide in Compound Fractures and Other Wounds.

Dr. Michael L. Mason, Chicago, Plastic Surgery and Repair.

Dr. Casper F. Hegner, Denver, Chest Injuries.

Drs. Sidney O. Levinson, Frank E. Rubovits Jr. and Heinrich Necheles, Chicago, The Clinical and Physiologic Aspects of Human Serum Transfusions.

Dr. Joseph F. Prinzing, Denver, Hernia.

Drs. Edward A. Oliver, Chicago, Louis Schwartz and Leon H. Warren, U. S. Public Health Service, Occupational Leukoderma.

Dr. John D. Shingle, Cheyenne, Wyo., Tick Fevers.

Dr. Newell C. Gilbert, Chicago, Reflex Causes for Angular Pain.

Dr. Andrew C. Ivy, Chicago, Recent Developments in Gastric Physiology.

Dr. Harold N. Segall, Montreal, Canada, The Aging Process.

At the annual banquet Tuesday evening, September 17, the guest speaker will be Mr. William Martin Jeffers, president of the Union Pacific Railroad, Omaha, on "The Importance of a Medical Department in Industry."

Academy of Ophthalmology and Otolaryngology.—The forty-fifth annual meeting of the American Academy of Ophthalmology and Otolaryngology will be held in Cleveland, October 6-10, with headquarters at the Hotel Cleveland and under the presidency of Dr. Frank E. Brawley, Chicago. The meeting will open with a general session Monday morning and mornings thereafter will be devoted to instructional courses. Scientific meetings of the sections on ophthalmology and otolaryngology will be held on alternate afternoons. Speakers at the opening session will be Drs. Brawley, who will deliver his presidential address; Secord H. Large, Cleveland, guest of honor at the meeting; Elmer L. Sevringhaus, Madison, Wis., on endocrinology, and Jacques J. Bronfenbrenner, Ph.D., St. Louis, on allergy. Among other speakers will be:

Dr. Walter B. Hoover, Boston, Progressive Gangrenous Ulcers of the Nose.

Dr. Frank R. Spencer, Boulder, Colo., Research Report: The Effect of Chemotherapy upon the Tubercle Bacillus with Special Reference to Sulfapyridine.

Dr. Hedwig S. Kuhn, Hammond, Ind., An Appraisal of Visual Defects in Industry.

Drs. Francis Bruce Fraclak and Max M. Peet, Ann Arbor, Mich., The Fundi in Hypertensive Disease Before and After Splenectomy.

Dr. Joseph D. Kelly, New York, Operative Treatment of Bilateral Abductor Paralysis.

Drs. Chevalier Jackson and Chevalier L. Jackson, Philadelphia, Cancer of the Larynx—Its Increasing Incidence.

Dr. James W. Cheney, Wichita, Kan., Neglected Treatment of Trachoma.

Drs. Alkernon B. Reese and Hayes E. Martin, New York, The Treatment of Retinoblastoma by Radiation.

Immediately following this meeting, the first Pan American Congress of Ophthalmology will be held, October 11-12, under the auspices of the academy.

CANADA

Public Health and Medical Meetings.—The twenty-ninth annual meeting of the Canadian Public Health Association will be held in Winnipeg, September 19-21, in conjunction with the annual meeting of the Manitoba Medical Association. The two associations will hold two joint sessions and a joint luncheon and dinner. At the first joint session there will be a preliminary report of a survey of maternal mortality made in Manitoba by the department of health and public welfare, the medical association, the department of pensions and national health and the Rockefeller Foundation. Dr. John A. Ferrell, associate director of the International Health Division of the Rockefeller Foundation, New York, will be chairman of this session. At other sessions speakers will include Drs. John G. Cunningham, Toronto, on industrial hygiene and national defense; Claude E. Dolman, Vancouver, B. C., present status of milk-borne disease hazards, and J. S. Fulton, D.V.S., Saskatoon, Sask., contagious abortion of cattle and undulant fever in man. At a public meeting Dr. Harold W. Wookey, Toronto, will speak on cancer control and Dr. Donald H. Williams, Vancouver, recent progress in control of venereal disease.

CORRECTIONS

Argentine Memorial Day.—In the letter from Buenos Aires published in THE JOURNAL, July 27, page 314, in the last sentence, "Uruguayan memorial day" should have been "Argentine memorial day."

Yellow Fever on Ship from South America.—A news item was published in THE JOURNAL, August 24, under the heading "Yellow Fever on Ship from South America." It was reported that five cases of yellow fever were found on a British ship that had touched at Freetown, West Africa, but the item as published omitted mentioning that the ship started from Buenos Aires, Argentina. According to information received from Dr. Hugh S. Cumming, Washington, D. C., director of the Pan American Sanitary Bureau, the nature of the disease in these cases is still under investigation, the diagnosis being clinical only to date (September 4).

Government Services

Marine Hospital Enlarged

An addition to the U. S. Marine Hospital at Stapleton, N. Y., providing 305 more beds and other facilities was recently opened and occupied. The cost of construction was more than \$1,100,000, according to *Public Health Reports*. The addition brings the capacity of the hospital to more than 1,000 beds. It provides medical, surgical, psychiatric and other special care annually to more than 50,000 legal beneficiaries, it was said.

Mental Hygiene Consultation Service

The U. S. Public Health Service has established a new office, that of mental hygiene consultant to the states, for the purpose of encouraging and giving aid in the organization of state mental hygiene programs, with Passed Assistant Surgeon Victor H. Vogel in charge. Mental health projects will be recognized as approved objects for expenditure of Title VI Social Security funds allocated to state health departments for the extension of public health work.

Specialist in Tuberculosis Control for Indian Service

Dr. Horace De Lien, special physician in tuberculosis control, has been assigned to duty in the office of the district medical director, U. S. Indian Service, San Francisco, to assume direction of tuberculosis control activities among the Indian population of California. Dr. Lien has recently completed one year of educational experience at the Henry Phipps Institute of Philadelphia, previous to which he was in charge of the Indian Service Sanatorium at Fort Bidwell, Calif., now discontinued. Dr. Lien's activities will be extended to include tuberculosis control among Indians in Nevada and Utah in the near future. A recent x-ray survey of about 1,200 Mission Indians in Southern California revealed that about 1 per cent had significant tuberculosis, exclusive of primary lesions. In comparison with other groups of California Indians, this indicates a relatively low incidence of tuberculosis.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 6, 1940.

Compulsory Service of Physicians

The government is taking measures to ensure that hospitals and other medical services shall be adequately staffed with physicians. The Emergency Powers Act gives power to direct physicians to perform such services as may be specified. For the present the application of the act will be confined to physicians within two years of becoming qualified. This power will be exercised by the senior officers of the Ministry of Health, in which they will be advised by the central medical war committees of England and Wales and of Scotland. These committees already advise on the medical recruitment of the armed forces.

Medical Students and the War

The medical profession has been profoundly affected by the war. The younger physicians have been conscripted for military and naval service and most of the older ones are engaged in national service, such as examination of recruits for the fighting services, staffing of hospitals and first aid for civilian casualties from air raids. The life of the medical student is also greatly affected, though the authorities want to interfere with his studies as little as possible. The great hospitals in the cities have been converted into casualty clearing stations for the large numbers of wounded expected from air raids, which so far have not materialized, and the normal work of these hospitals has, as far as possible, been shifted to hospitals in safer areas in the surrounding country. This has meant a great disruption of teaching. Other effects are illustrated by the following:

More than 300 students of Leeds University Medical School will give up their long vacation to join a scheme of voluntary civil defense, which is designed to interfere as little as possible with their studies. The students are divided into three groups. The first group consists of sixty students due to take their final examination soon. They will serve in Leeds hospitals should air raids become severe. In the second group are 150 who have done at least six months of clinical work and not more than two and one-half years of hospital work. They are allocated to staffs of hospitals and are being trained to act as assistants to surgeons and anesthetists and as stretcher bearers while continuing their own work. The third group consists of 100 who have done less than six months of clinical work and more than two terms of anatomy and physiology. They are receiving an intensive course in first aid training and antiques work, and it is proposed to use them as mobile first aid squads.

The Physical Education of Youth

The war has increased attention to nutrition and physical training. In a debate in the House of Lords on the physical training of youth Lord Dawson said that good nutrition and physical education must go hand in hand. Fortunately in this country nutrition was going steadily forward. One of the cheapest campaigns which the Board of Education could institute would be to send vans to the rural districts where people could be shown how to choose and cook food. Physical education had been neglected because of the fallacy that education was necessary for the mind but not for the body. Our educators had not even been aroused by what had been going on in Germany in the last twenty years. But a good side of the picture was the progressive introduction of physical training into schools and the result was seen in a great improvement in physique. However, for most children physical training stopped at 14, the most critical age. The vital adolescent years were left to drift and the quality of the body to deteriorate. That

character did not deteriorate was remarkable. On the other hand, the Germans dealt thoroughly with the period of adolescence. At the very time when the influence of urbanization, mechanization and hustle needed counteracting by the building of individuals with bodies and minds self made, not machine made, we were without the means of training. In this crisis of our history the strength and endurance of our man power, including that of our youth, was vital. A director of physical education, with a small staff, should be appointed with even compulsory powers to direct physical education from the age of 14 upward. His work should be through existing organizations as far as possible. At 18 the training would be based on the War Office. Those in training would require supplementary nutrition. Milk was the solution of that.

Replying for the government, Viscount Clifden said that it was difficult to see how any compulsory scheme of training, even if desirable, could work effectively. It would lead to misrepresentation and might jeopardize general acceptance of more comprehensive training. Three factors were increasing the opportunities for young people to get regular training and recreation: 1. The Ministry of Labor and Board of Education are for the first time to be brought into direct contact with the large numbers of girls and boys in factories not now associated with any youth organization. It would be possible to make a direct appeal to them and provide adequate facilities. 2. All large voluntary organizations had agreed as a special wartime emergency measure to open their doors to all comers. 3. The Central Council of Recreative Physical Training and the football association had launched a scheme for training men and boys from 16 upward.

Homes in Australia and Canada for Physicians' Children

Schemes for the transporting of British children to the dominions, where they will be free from the war dangers which threaten the civilian population, are being pushed forward; but transport offers difficulties. Because of the possibilities of attacks by submarines, convoy is considered necessary and at the present moment the government cannot spare this. A special scheme for physicians' children is being arranged. Australian physicians have offered to take into their homes British physicians' children under the age of 16, either accompanied or unaccompanied by their mothers, to a total of 500. The arrangements will be made between the secretary of the British Medical Association and the secretary of the federal council of the British Medical Association in Australia. Parents will be responsible for the passage money and education, and maintenance will be the subject of individual arrangements. Physicians in Canada have offered to open their homes to 1,100 unaccompanied children of British physicians evacuated by the government and selected by the Children's Overseas Reception Board.

BUENOS AIRES

(From Our Regular Correspondent)

Aug. 9, 1940.

Psychoses in Relation to Language Isolation

Dr. E. Eduardo Krapf, director of a division in a large hospital for mental diseases in Buenos Aires, the Hospicio de las Mercedes, reported to the society for neurology and psychiatry a study of mental disorders in immigrants attributable to their ignorance of the native language. Fifteen years previously A. Ameghini had called attention in Buenos Aires to the fact that, while two thirds of the population of the country consisted of native stock, two thirds of the inmates of institutions for mental diseases were recruited from immigrant stock. His observations were confirmed and the same condition has been found in some other states. Spencer L. Dawes records similar observations (*Am. J. Psychiat.* 4:449 [Jan.] 1925) for the state of New York. Statistics such as these need to be cautiously

evaluated, since differences of age level must be taken into account. Immigrants represent largely the higher age levels in which the incidence of mental diseases is likely to be greater. Besides, immigrants are apt more frequently than natives to be without families and homes and hence more apt to be consigned to an institution. Other factors involve brooding over expatriation and nostalgia. Heredity and constitutional factors are also involved. Emigration from one's native land may itself be a sign of disturbed mentality or the social consequence of pre-morbid conditions or of unsteady character. Economic difficulties, hunger and wretchedness may also have pathogenic significance, tending to weaken the will to live. Temporary inability to adapt oneself to new climatic conditions frequently exercises a damaging effect. Krapf had stressed, in a previous article, the meaning of "shock," involved in the difference of seasons for the northern and southern hemisphere. The time during which adjustment to new atmospheric conditions had to be made represented a dangerous period of increased psychophysical lability and was indicated by depression in immigrant women. Usually complete and permanent recovery occurred after a few months. Disturbances arising from difficulties of adjusting oneself mentally to the national and social environment in a new country also play their part. Isolation and the feeling of loneliness may induce mental upsets either directly or concomitantly. It may be assumed that the psychologic relations between nostalgia and mental disorders are rooted primarily in a sense of loneliness. Psychoses due to the failure of adapting oneself mentally occur among all categories of immigrants, but they are peculiarly and with greater frequency observable, in Argentina, among immigrants of non-Latin stock, owing to their ignorance of the language of the country. This condition is similar to certain mental reactions observed in the deaf. Immigrants lacking the knowledge of Spanish lack an important means of social intercourse. In his study of the inmates of the Hospicio de las Mercedes, Krapf found in 1937 that among 215 inmates of non-Latin origin seventy-two (33.5 per cent) showed paranoid psychoses of all types, whereas only forty-two (19.5 per cent) of the inmates of Spanish descent were so affected. These observations agree with data gathered in New York by Benjamin Malzberg (*Psychiat. Quart.* 10:127 [Jan.] 1936) in which forms of paranoia predominated in persons of Latin stock, clearly a sign of the effect of mental isolation due to ignorance of the language spoken in the country.

Marriages

JOHN B. LARSON, Laurens, Iowa, to Miss Elizabeth Shortridge of Sioux Falls, S. D., in Remsen, Iowa, July 15.

LINCOLN BRUCE DONALDSON, Evanston, Ill., to Miss Gertrude Hagar Galloway at Hubbard Woods, June 29.

PRESTON DE WITT CONGER, Tifton, Ga., to Miss Mary Nell Morgan in Lakeland, Fla., June 23.

WILLIAM GEORGE MEYER, New York, to Miss Helen Hensel O'Hara of Dayton, Ohio, in June.

EUGENE A. SULLIVAN, Amboy, Ill., to Miss Alice Florence Crandall of Des Plaines, June 29.

RAVIS AARON BRANNON JR. to Miss Elizabeth Virginia Hudson, both of Utica, Miss., June 23.

FREDERICK TAYLOR MERCHANT, Marion, Ohio, to Miss Ethyl Rush of Columbus, Ind., in June.

FRANKLIN G. RUDOLPH, Hammond, Ind., to Miss Alene Bowman at Odon, Ind., August 3.

ROBERT LYMAN NELSON to Miss Phyllis Shaw, both of Duluth, Minn., June 1.

ALBERT L. MARSHALL JR., Indianapolis, to Miss Mary Cox of Odon, Ind., July 27.

FRANCIS DRAKE KENDALL, Columbia, S. C., to Miss Lella Lindler in June.

Deaths

Hans Zinsser ☉ Boston, eminent as a scientist, physician and author, died in New York, September 3, of leukemia at the age of 61. Dr. Zinsser had just published his autobiography under the title "As I Remember Him," and in this book he had forecast his death (*THE JOURNAL*, August 10, p. 481).

Hans Zinsser was born in New York in 1878. He received his A.B. degree from Columbia University in 1899 and his A.M. degree in 1903, and the honorary degree of D.Sc. was conferred on him by Columbia in 1929. After his graduation in medicine in 1903, he served an internship from 1903 to 1905 and then began his career as bacteriologist at the Roosevelt Hospital and the College of Physicians and Surgeons. For five years he served as instructor in bacteriology and hygiene in this institution and was also assistant pathologist in St. Luke's Hospital. He then became assistant professor and later professor of bacteriology at Stanford University. In 1913 he returned to Columbia as professor of bacteriology and remained until 1923, at which time he joined the staff of Harvard Medical School as professor of bacteriology and immunology, a position which he occupied until his death. He was consulting bacteriologist to the Children's Hospital and the Peter Bent Brigham Hospital. During World War I he served as major in the United States Army Medical Corps and later was promoted to the rank of colonel. He was sanitary inspector of the First Army Corps and of the Second Field Army of the A. E. F. in France and also was assistant director of laboratories and infectious diseases for the Expeditionary Force. In the summer of 1923 he went to Russia for the League of Nations Health Section as sanitary commissioner. In 1935 he was exchange professor in Paris and in 1938 at Peiping Union Medical College. For his work he was awarded the Distinguished Service Medal of the United States government, the Legion of Honor of the French government and the Order of St. Sava of the Serbian government.

Dr. Hans Zinsser was widely recognized as an authority in his field and held memberships in the National Academy of Science, the American Philosophical Society, the American Association for the Advancement of Science, the American Academy of Arts and Sciences, the Harvey Society, the Society for Experimental Biology and Medicine, the Association of Pathologists and Bacteriologists, the Society of American Bacteriologists, the American Association for Cancer Research, and the American Society for Experimental Pathology, also the American Academy of Tropical Medicine, the American Association of Immunologists, the American Public Health Association, the Association of American Physicians, the American Birth Control League, the American Committee for the Control of Rheumatism, the American Epidemiological Society and other organizations. He had been honored by election to membership in the Alpha Omega Alpha and Sigma Xi. Honorary degrees were awarded not only by Columbia but also by Western Reserve, Lehigh, Yale and Harvard.

Dr. Hans Zinsser began his writing first as a contributor of innumerable periodical articles to medical science, his books including the *Textbook of Bacteriology*, 1911; his work on *Infection and Resistance* and later his work on *Resistance to Infectious Diseases*, published in 1931, and last year a new edition of his work on *Immunity*. In the midst of his scientific career, in which he achieved recognition as one of the foremost bacteriologists of our times, he took part in the campaign

against typhus and had recently announced the development of a technic for the mass production of vaccine against this plague.

Coincidentally he produced in 1935 his book on "Rats, Lice and History," which became a best seller. He was a philosopher, historian, poet and wit, and he had contributed poetry to many leading periodicals. This year appeared the biography of R. S. under the title "As I Remember Him," in which he described in the third person the life of Hans Zinsser. The book became at once a nonfiction best seller and was the choice of the *Book of the Month Club* for July. Not only are the initials R. S. the last letters of his name, Hans Zinsser, but they were chosen also because they meant to him "romantic self." The paragraphs in which he wrote of his own death are a remarkable contribution. He wrote:

Something took place in his mind that he regarded as a sort of compensatory adjustment to the thought that he would soon be dead. In the prospect of death, life seemed to be given a new meaning and fresh poignancy. . . . From now on, instead of being saddened, he found—to his own delighted astonishment—that his sensitiveness to the simplest experiences, even for things that in other years he might hardly have noticed, was infinitely enhanced. . . .

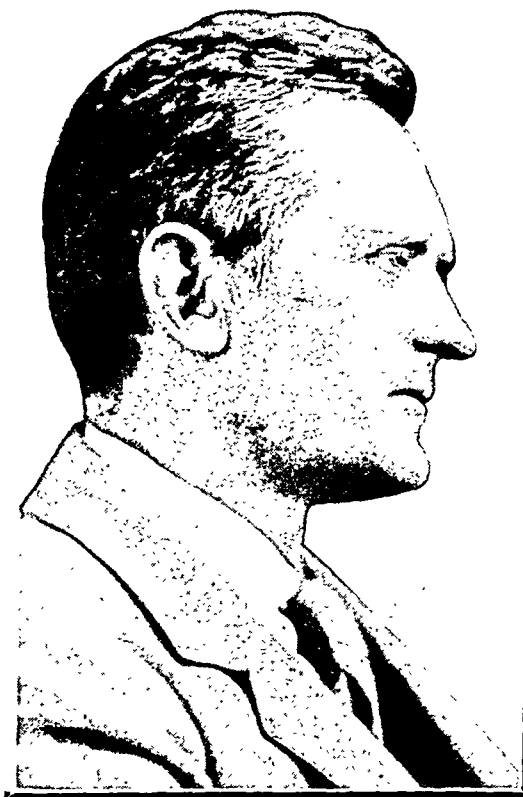
As the disease caught up with him R. S. felt increasingly grateful for the fact death was coming to him with due warning, and gradually. So many times in his active life he had been near sudden death by accident, violence or acute disease; and always he had thought that rapid and unexpected extinction would be most merciful. But now he was thankful that he had time to compose his spirit and to spend a last year in affectionate and actually merry association with those dear to him.

Dr. Hans Zinsser was a courageous investigator, the possessor of an extraordinary mind, a tolerant, judicial, scientific leader. His contribution to the world was significant. His death at the early age of 61, no doubt, deprives mankind of many another work of permanent importance.

Charles Bert Reed ☉ Chicago; Rush Medical College, Chicago, 1887; member of the House of Delegates of the American Medical Association from 1933 to 1940 and delegate at special sessions in 1935 and in 1938; demonstrator of obstetrics at Northwestern University Medical School from 1903 to 1906, assistant professor from 1906 to 1912 and associate professor since 1931; past president of the Illinois State Medical Society and the Chicago Medical Society; treasurer of the Chicago Gynecological Society from 1904 to 1909 and from 1910 to 1929 and president 1909-1910; fellow of the American College of Surgeons; chief obstetrician to the Wesley Memorial Hospital; attending obstetrician to the Cook County Hospital from 1902 to 1906; author of textbooks entitled "Obstetrics for Nurses" and "Operative Obstetrics on the Manikin" and many others; aged 74; died, September 3, in Sand River, Ont., of heart disease.

Maurice Oliver Magid ☉ New York; Cornell University Medical College, New York, 1905; past president of the Bronx County Medical Society, the Bronx Gynecological and Obstetrical Society; the New York Physicians' Association; chairman and formerly secretary of the Joint Committee of the Organized Medical and Dental Professions of the City of New York; at one time instructor in gynecology at the New York Polyclinic Medical School and Hospital; aged 57; was a director, chairman of the medical board and a founder of the Hunts Point Hospital; on the staff of the Bronx Hospital, where he died, July 31.

William Vincent Whitmore, Tucson, Ariz.; University of Southern California College of Medicine, Los Angeles, 1890; member of the House of Delegates of the American Medical Association in 1910; past president of the Arizona State Medical Association and the Pima County Medical Society; for many years member of the school board; formerly member of the



HANS ZINSSER, M.D., 1878-1940

board of regents of the University of Arizona; aged 78; died, July 24.

William M. Cole, Long Beach, Calif.; Manitoba Medical College, Winnipeg, Man., Canada, 1913; member of the California Medical Association; fellow of the American College of Physicians; served with the Canadian Army during the World War; on the staffs of the Seaside Memorial Hospital, St. Mary's Hospital and the Community Hospital; aged 48; died, July 9, in the Compton (Calif.) Sanitarium of coronary sclerosis.

Otto H. Crist, Danville, Ill.; Northwestern University Medical School, Chicago, 1906; member of the Illinois State Medical Society; member of the Central Association of Obstetricians and Gynecologists; fellow of the American College of Surgeons; past president of the Wabash Valley Aesculapian Society; on the staffs of the Lakeview and St. Elizabeth's hospitals; aged 61; died, August 7, of coronary thrombosis.

Frank A. Stubblefield, Brighton, Ill.; Missouri Medical College, St. Louis, 1882; physician at the Jacksonville (Ill.) State Hospital from 1902 to 1914 and the Alton (Ill.) State Hospital from 1914 to 1916, when he was appointed managing officer of the Chester State Hospital, Menard, where he served until 1934; aged 84; died, July 27, at the Alton (Ill.) Memorial Hospital of cardiorenal disease.

Marion R. Hammer, Newton, Iowa; Northwestern Medical College, St. Joseph, Mo., 1881; King Eclectic Medical College, Des Moines, 1889; member of the Iowa State Medical Society; past president of the Jasper County Medical Society; formerly city physician and county coroner; on the courtesy staff of the Mary Frances Skiff Memorial Hospital; aged 87; died, July 11, of cerebral hemorrhage.

Cloyce Robert Tew, Raleigh, N. C.; Johns Hopkins University School of Medicine, Baltimore, 1931; member of the Medical Society of the State of North Carolina; fellow of the American College of Surgeons; secretary of the Wake County Medical Society; on the staff of the Rex Hospital; aged 33; died, July 11, of a self-inflicted bullet wound.

Thomas Jefferson Marcus, Clanton, Ala.; Memphis (Tenn.) Hospital Medical College, 1910; member of the Medical Association of the State of Alabama; past president and secretary of the Chilton County Medical Society; aged 69; on the staff of the Central Alabama Hospital, where he died, July 30, of heart disease.

Alex Malcolm Macaulay ♂ Great Falls, Mont.; Manitoba Medical College, Winnipeg, Man., Canada, 1907; fellow of the American College of Surgeons; served during the World War; member of the visiting staff of the Columbus Hospital; aged 63; died, July 23, in Conrad of gangrenous appendicitis.

Joseph Edward Gately ♂ Baltimore; University of Maryland School of Medicine, Baltimore, 1902; served during the World War; aged 60; on the staffs of the Johns Hopkins Hospital and St. Joseph's Hospital, where he died, July 21, of cerebral hemorrhage, embolism and coronary infarction.

James Rufus Rogers, Raleigh, N. C.; College of Physicians and Surgeons, Baltimore, 1886; member of the Medical Society of the State of North Carolina; aged 73; for many years on the staff of the Rex Hospital, where he died, July 5, of acute mesenteric thrombosis and diabetes mellitus.

Charles R. Teeter, Russellville, Ark.; University of Arkansas School of Medicine, Little Rock, 1907; member of the Arkansas Medical Society; for many years member of the school board of Pottsville; aged 65; died, July 13, in St. Vincent's Infirmary of carcinoma of the right kidney.

Frank H. Green ♂ Rushville, Ind.; University of Indianapolis Medical Department, 1897; past president of the Rush County Medical Society; formerly county coroner; served during the World War; owner of a hospital bearing his name; aged 63; died, July 30, of carcinoma of the liver.

Rollin John Smith, Appleton City, Mo.; Missouri Medical College, St. Louis, 1887; member of the Missouri State Medical Association; aged 79; died, July 20, in the Trinity Lutheran Hospital, Kansas City, of hypertensive cardiovascular disease, cerebral hemorrhage and arteriosclerosis.

Charles Alex Van Slyke ♂ St. Paul; University of Minnesota College of Medicine and Surgery, Minneapolis, 1891; an Affiliate Fellow of the American Medical Association; aged 75; died, July 21, in St. Joseph's Hospital of bronchopneumonia following a fracture received in a fall.

Daniel Sayer Hardenberg, Jersey City, N. J.; Columbia University College of Physicians and Surgeons, New York.

1904; member of the Medical Society of New Jersey; aged 60; on the staff of the Christ Hospital, where he died, July 28, of hypertensive heart disease.

James Moffatt Alexander, Statesville, N. C.; Georgetown University School of Medicine, Washington, D. C., 1925; member of the Medical Society of the State of North Carolina; aged 39; died, July 6, in Broadoaks Sanatorium, Morganton, of chronic myocarditis.

William Herbert Wardell, Moose Jaw, Sask., Canada; Manitoba Medical College, Winnipeg, 1902; fellow of the American College of Surgeons; on the staffs of the Moose Jaw General and Providence hospitals; aged 69; died, June 4, of carcinoma of the stomach.

Robert Walter Frischkorn, Washington, D. C.; George Washington University School of Medicine, Washington, 1904; veteran of the Spanish-American War; aged 64; died, August 2, in the Providence Hospital of acute nephritis and coronary occlusion.

Charles Walice Gardner, Mount Pleasant, Iowa; College of Physicians and Surgeons, Keokuk, 1894; member of the Iowa State Medical Society; aged 82; died, July 26, in the Mercy Hospital, Burlington, of hypertrophy of the prostate and heart disease.

Martin Luther Bomberger, Lebanon, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1940; aged 30; intern at the Harrisburg (Pa.) Hospital, where he was found dead in bed, July 8, of a self-inflicted incised wound of the throat.

Francis Evans Wynne ♂ Baxter Springs, Kan.; University of Kansas School of Medicine, Kansas City, 1933; president of the Cherokee County Medical Society; aged 31; died, July 30, in the McCune-Brooks Hospital, Carthage, Mo., of poliomyelitis.

Bernard Andrew Bailey, Wiscasset, Maine; Dartmouth Medical School, Hanover, N. H., 1890; member of the Maine Medical Association; served during the World War; aged 70; died, July 18, of cerebral embolism and chronic nephritis.

Joseph Payson Clark, Boston; Harvard Medical School, Boston, 1887; member of the Massachusetts Medical Society; past president and treasurer of the American Laryngological Association; aged 80; died, July 21, of arteriosclerosis.

Joseph Maurice Jackson, Pittsburgh; Columbia University College of Physicians and Surgeons, New York, 1899; for many years on the staff of the Montefiore Hospital; aged 63; died, July 31, in Long Beach, Calif., of coronary thrombosis.

Robert Maclay Smith, Gonzales, La.; Tulane University of Louisiana School of Medicine, New Orleans, 1909; member of the Louisiana State Medical Society; aged 57; died, July 28, in Jackson of a fracture of the hip and pneumonia.

Eugene Rankin Cocke, Asheville, N. C.; Jefferson Medical College of Philadelphia, 1913; member of the Medical Society of the State of North Carolina; served during the World War; aged 53; died, July 14, of mesenteric thrombosis.

Bernard Edward Bauman, St. Louis; St. Louis University School of Medicine, 1936; resident in tuberculosis at the Mount St. Rose Sanatorium; aged 34; died, August 4, of an injury received when he dived into shallow water.

John Thomas Guynes, Jourdanton, Texas; University of Tennessee College of Medicine, Memphis, 1914; member of the State Medical Association of Texas; health officer; aged 57; died, July 21, of coronary occlusion.

Myron Preston Denton ♂ New York; Harvard Medical School, Boston, 1887; an Affiliate Fellow of the American Medical Association; aged 80; died, July 22, in the General Hospital, Saranac Lake, of uremia.

James Henry Johnson, Hillsdale, Mich.; Detroit College of Medicine, 1897; member of the Michigan State Medical Society; served during the World War; aged 64; died, July 31, of lung tumor and abscess.

Harvey D. Miller, Myerstown, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1896; aged 68; died, July 31, in St. Joseph's Hospital, Reading, of coronary and cerebral sclerosis.

Frank Lester Bigsby, Kirksville, Mo.; Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1901; served during the World War; aged 62; died, July 27, of arteriosclerosis.

Toby Anthony Greco, Margate City, N. J.; Jefferson Medical College of Philadelphia, 1916; member of the Medical Society of the State of Pennsylvania; aged 46; died, July 18, of coronary occlusion.

Correspondence

THE TREATMENT OF POLYCYTHEMIA BY THE INDUCTION OF AN IRON DEFICIENCY STATE

To the Editor:—Reznikoff (*THE JOURNAL*, July 27, p. 298) has recently questioned the rationale of our method of treatment in polycythemia (Dameshek, William, and Henstell, H. H.: *J. Clin. Investigation* 16:683 [July] 1937; *Ann. Int. Med.* 13:1360 [Feb.] 1940), which combines systematic phlebotomy with a low intake of iron. He states that "most of these patients have a fairly normal color index, . . ." which is directly contrary to our experience and that of others, and that he does not understand "why cutting the iron down inhibits cell production. . . ."

What one must aim for in the rational treatment of the disease is not simply reduction in red cell count but reduction of the total red cell mass, as Haden (*Am. J. M. Sc.* 196:493 [Oct.] 1938) puts it. In this endeavor the greatest emphasis is laid on the figures for hemoglobin, hematocrit and red cell volume with but little reference to the red cell count. Our method, which has now been in successful use for more than five years, is based on the development of an iron deficiency state through a series of systematic venesections and its prolongation by the use of a diet low in iron.

In a fresh case of polycythemia (hemoglobin 140 per cent, red blood cells 9 million, hematocrit 75 per cent) venesections of 500 cc. of blood are performed twice a week until the hemoglobin content is reduced to approximately 80 to 85 per cent, red blood cells from 5 to 5.5 million, and the hematocrit reading from 42 to 45 per cent. Ordinarily, this requires from six to eight venesections. The patient is then given a diet low in iron, containing approximately 6 mg. of iron a day. This requires avoidance of red meat, meat soups, liver, eggs, rye bread and brown cereals. Fowl once a week, fish twice a week, cheese, milk and legumes give sufficient protein.

The method was instituted because of our disappointment with the uncertainties and dangers inherent in the use of x-rays, phenylhydrazine, acetyl phenylhydrazine and solution of potassium arsenite as well as through a fortuitous circumstance. One of our patients, poorly controlled with the measures mentioned, had an unusually severe hematemeses—due to peptic ulcer—and was placed on a Sippy regimen. It was noted that, although the red cell count rose to fairly high levels after a few months, the hemoglobin concentration remained consistently low. What is more, there was complete relief in all the symptoms of the polycythemic state. It was reasoned that a state of chronic hypochromic "anemia" (hemoglobin 70 per cent, red blood cells 5-6-7 million) had been induced by means of hemorrhage combined with the low iron content of the orthodox Sippy diet.

It was therefore proposed to imitate severe hemorrhage in other cases of polycythemia by performing venesections twice a week for several weeks. This procedure, particularly when combined with a low dietary intake of iron, results in a loss of hemoglobin from the body and ultimately in a depletion of the bodily stores of iron. Such a method has for many years been successfully used by Whipple and his collaborators in their colony of anemic dogs, and its results are analogous to the condition found in chronic "primary" or "idiopathic" hypochromic (iron deficiency) anemia of adult women. Reductions are obtained in the color index, mean corpuscular volume, mean cell diameter and mean corpuscular hemoglobin concentration. These reductions become more pronounced as the red cell count begins to rise, while the hemoglobin and hematocrit percentages remain at fairly constant levels. It is apparent that, although the bone marrow continues to produce unusually large numbers

of erythrocytes, the lack of sufficient iron within the body must necessarily result in a diminution in hemoglobin concentration of each individual red cell and in the production of small red blood cells. As a result, the hemoglobin concentration in the blood remains low and the red cells become more and more hypochromic and small. Thus from six to twelve months after a series of venesections it is not unusual to see figures such as these: hemoglobin 85 per cent, red blood cells 8.5 million, color index 0.5, hematocrit 50 per cent, mean corpuscular volume 60 cubic microns, mean cell diameter 6.5 microns.

Under such circumstances the outcome of the red cell count becomes a minor consideration. Of major importance are the hemoglobin and hematocrit percentages. With low values for hemoglobin the hematocrit percentage is necessarily low whatever the red cell count, and low or normal values are obtained for blood viscosity, total blood volume, red cell volume and red cell mass. When all these figures are either low or normal, the numerous symptoms of polycythemia usually disappear completely, to return when the hemoglobin and hematocrit percentages again become definitely increased (usually within six to twelve months).

As Minot and Castle (1939 Year Book of General Medicine, p. 329) state: "Treatment of the disease has recently become distinctly more satisfactory because of recognition of the physiologic basis of the beneficial effects of repeated venesections and its consequent more intelligent application. . . . Repeated bleedings . . . eventually lead to the development of a hypochromic blood picture with, as in any form of chronic blood loss, diminished blood regeneration." From the physiologic standpoint it would seem likely that restriction of the iron content of the diet would help to maintain a chronic state of iron deficiency. This has not yet been entirely established, although we have evidence that such reduction prolongs the period of remission between venesections (average eight months in our cases).

WILLIAM DAMESHEK, M.D., Boston.

RETENTION CATHETER OR INTERVAL CATHETERIZATION

To the Editor:—The discussion by Dr. Samuel N. Vose of Boston (*THE JOURNAL*, August 10, p. 475) of my paper (*ibid.*, June 15, p. 2368) disagrees with abolition of the retention catheter in preoperative preparation of prostatic patients. Since the point at issue has a rather important bearing on the care of thousands of patients in our hospitals annually, it is to be hoped that others besides Dr. Vose will make and report observations to sustain or refute my contention that interval catheterization should supersede the retention catheter. I am convinced that the almost universal use of the retention catheter is due to uncritical acceptance of the dictums of the past and that the custom will not stand the test of clinical comparison with intermittent catheterization.

To take up the specific points of Dr. Vose's discussion, I must express my doubt concerning the adequacy of the measures for management of the retention catheter on which he relies to prevent complications. The shortcomings of the retention catheter are not to be overcome by attention to such details as shaving the pubic hair and closed irrigating systems, laudable as these all may be. There is doubtless a certain advantage in the self-retaining balloon catheter which Dr. Vose prefers, but external retaining devices properly applied cannot justly be blamed for the febrile episodes and purulent urethritis so commonly associated with use of the retention catheter. No refinement of technic can hope to secure absolutely aseptic insertion of a catheter; the anterior urethra itself is not usually sterile (Schulte, T. L.: *Newer Methods in a Study of the Bacteriology of the Urinary Tract*, *Proc. Staff Meet., Mayo Clin.* 14:249

[April 19] 1939), and least of all that of prostatic patients, who often have been carelessly catheterized before entering the hospital. The basic fault of the retention catheter is that it continuously and harshly traumatizes the urethra. Gross infection then inevitably follows in spite of all care.

Dr. Vose thinks that extremely small retention catheters (even No. 12 French) would suffice for vesical drainage and would allow ample space for the escape of "secretions" around the catheter. I have grave misgivings as to the reliability of so small a catheter, and Dr. Vose admits that in actual practice he uses a No. 16 French catheter. This is in accord with common practice. In any case I feel that, within reasonable limits, the caliber of the retention catheter is not a crucial point. Small or large, a retention catheter, like a cinder in the eye, is a harmful and unpleasant irritant. Dr. Vose concedes this by implication when he stresses the matter of drainage around the catheter. Under a regimen of interval catheterization there need be no concern about urethral drainage, since there will be no discharge, purulent or otherwise.

It is unfortunately not possible to carry out a controlled experiment to settle this question, but the conditions of such a study can easily be postulated. Two sizable groups of healthy young men free from all evidence of infection of the urinary tract would voluntarily submit themselves to a prolonged period of vesical drainage, in the one case with the retention catheter and in the control group with interval catheterization. My experience convinces me that the retention catheter group would show a much higher incidence of complications—in other words that the retention catheter is a device well calculated to make even a well man sick.

My memory carries back to numerous old men who entered various hospitals and proceeded to lapse into febrile coma and die after installation of the retention catheter. These patients never came to surgery and therefore never figured in the mortality tables of prostatic operations; but they were an important element in the total mortality rate of prostatism. Death certificates described the immediate cause of death as "uremia." The rarity of similar cases in my present practice has made me believe that sepsis induced by the retention catheter was a large contributing factor in these deaths.

In personal discussions of interval catheterization of prostatic patients at a recent urologic meeting, several urologists expressed approval of the idea but declared they considered it unfeasible because interns would object to such drudgery. I do not think it necessary or fair to ask interns to assume a task which can be so easily made a routine. Intelligent orderlies quickly learn to perform this duty in a thoroughly satisfactory way. Interval catheterization has seemed so obviously superior and has been so eminently gratifying that I would urge all urologists at least to give it a trial.

RICHARD P. MIDDLETON, M.D., Salt Lake City.

MYASTHENIA GRAVIS

To the Editor:—The report of an apparently miraculous recovery from myasthenia gravis following implantation of pellets of synthetic adrenal hormone (*THE JOURNAL*, July 13) will not impress many who are familiar with the disease. The diagnosis in the case may be questioned; furthermore, limited observations on a single case are not convincing.

The young physician thought to be the victim of myasthenia gravis presented symptoms which suggest the results of nervousness and anxiety. It is common for nervous medical students and young physicians to acquire the symptoms of any disease which they happen to study. Did this patient recover from myasthenia gravis or merely from nervous manifestations which simulated it?

A recent editorial in *THE JOURNAL* pointed out the possible dangers from the indiscriminate use of desoxycorticosterone acetate and condemned the clinical use of the material in conditions in which it had not been proved to be of value. Should not this warning be applied to the use of the material in myasthenia gravis?

FRANK N. ALLAN, M.D., Boston.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

"INTESTINAL FLU"

To the Editor:—The clinician tells us there is an entity of "intestinal flu." The bacteriologist says there isn't. Please clarify this problem.

M.D., Ohio.

ANSWER:—Since the term "intestinal flu" is almost entirely of clinical use, the bacteriologist has not been in a position to pass on its validity. There are apparently outbreaks of disease in which gastrointestinal symptoms and abdominal pain are prominent. This set of symptoms is, however, extremely uncommon in epidemics of influenza. In most instances the so-called intestinal flu is found to be due to water-borne or food-borne bacterial infection. There is little justification for the continued use of the term, since it implies associations which are unwarranted.

ECZEMA OF AUDITORY CANAL

To the Editor:—Can you give me suggestions as to the treatment of eczema of the auditory meatus, of many years' standing, in a woman 54 years old? There is so much thickening of the tissues that the opening is practically closed. Blood pressure and other conditions are normal, though the patient is definitely overweight. Is resection or cautery ever justifiable in opening up the canal? It would seem unpractical, but the woman wishes to hear, and it is difficult to do so with the canals closed.

Melvin A. Drake, M.D., Buhl, Idaho.

ANSWER:—So-called eczema of the auditory meatus differs from dermatitis elsewhere in its inaccessibility and because of the danger of swelling closing the canal. The meatus offers a lodging place for infection from without or from the middle ear and its accumulation of wax and epithelial debris makes a good culture medium for various organisms, saprophytic or pathogenic. These peculiarities must be added to the usual difficulties of an itching dermatosis, eczematoid in character. One must consider (1) contact dermatitis, (2) infectious eczematoid dermatitis, (3) certain forms of dermatitis medicamentosa, (4) neurodermatitis, (5) the result and only outward manifestation of some metabolic disturbance such as an upset sugar metabolism or liver dysfunction, (6) a part of one of the commoner scaly dermatoses such as psoriasis or seborrheic dermatitis, (7) part of one of the rarer cutaneous or general diseases as lymphoblastoma, and (8) a combination of two or more of them.

In a case in which the ear canal is the only part of the skin involved, as is assumed for the case under discussion, the probability lies strongly with the second of these possibilities and a careful search for fungi and bacteria is in order. The scales should be examined for fungi, the exudate for both fungi and bacteria. Before making cultures the canal should be thoroughly cleansed to get rid of most of the saprophytes. E. J. Walen (*Fungous Infection of the External Ear*, *THE JOURNAL*, Aug. 6, 1938, p. 502) prefers an alcoholic solution of sodium sulfide for the scales because the ordinary hydroxide solution dissolves some of the fungi. For culture of fungi he uses Sabouraud's or Shaw's medium.

Cultures for bacteria are also important as described by J. H. Mitchell (*Streptococcus Dermatitis of the Ears*, *THE JOURNAL*, Jan. 30, 1937, p. 361). The frequency with which an infectious eczematoid dermatitis of the face originates from an ear canal infection is not to be denied. Williams, Montgomery and Powell studied a series of cases of ear dermatitis (*Dermatitis of the Ear*, *THE JOURNAL*, Aug. 19, 1939, p. 641). In some they found fungi, in others bacteria and in still others a mixture of these two forms of plant life.

On another occasion Mitchell warned against the use of any but the most soothing of drugs in treating cutaneous infections

without a preliminary patch test of each drug, to protect against the possibility of adding a contact dermatitis to the picture. This is a wise and practical measure. The infection may have found its opportunity to localize in a preexisting sensitization dermatitis. Some years ago White suggested that fungous infections predispose to sensitizations.

Swelling of the walls of the canal can usually be reduced by the use of glycerin tampons, increased in size as the canal is dilated. If the skin is oozing, painting with silver nitrate solution 10 to 50 per cent will often dry it.

The fourth possibility listed must not be forgotten in treating any itching disease, for while primary neurodermatitis is a common skin disease, the neurotic element has to be considered in every case of itching. Rubbing with the finger in the ear canal, or often with more dangerous instruments such as hairpins, can be taken for granted in any case of itching until the patient has been warned of its harmful effect. Even then only those with the greatest self control can resist the urge to scratch or rub. A substitute action must be provided in the application of a soothing lotion such as 1 per cent phenol in alcohol. This should be dropped into the canal in small amounts, or if swabbing is desired the patient or nurse must be warned against the slightest unnecessary rubbing.

Ointments are less satisfactory in the ear canal than elsewhere. Two per cent gentian violet solution in water is an effective antiseptic in many cases and unlikely to cause irritation. Roentgen rays may be found helpful in reducing the inflammation and itching. They may be used in divided doses, 75 roentgens once a week. Some patients get a lasting result from such treatment, but oftener it proves to be only a temporary help. It has the disadvantage that the amount of treatment that can be given with safety is strictly limited and that no irritating applications of any kind can be used with safety in conjunction with roentgen rays or within three weeks after the course of irradiation has ended.

Surgical measures such as those suggested are seldom justified and often lead to further trouble.

UNUSUAL ALOPECIA AREATA

To the Editor:—A 12 year old girl of Polish extraction complained of intervals of complete alopecia, occurring two or three times a year for the past eight years. Loss of hair takes about one week to be complete and is usually accompanied by mild right frontal headache and slight fever. Following the loss of hair, regeneration seems to have been rapid. There is no association with season or other illness. The only illness in the past history was measles at the age of 2 years, with no apparent complications. The family history is entirely negative. She gets along well in school and is in the sixth grade. Menstrual onset has not yet appeared. The patient is rather poorly nourished, with a fair complexion. Her appearance is bright. Skin turgor is good. The scalp hair is dry and brittle and shorter over the occiput. There are no areas of patchy alopecia and no inflammation of the scalp. Eyebrows and eyelashes are normal in texture. There is no hair growth anywhere on the trunk or the extremities. Pupils are equal and react to light and in accommodation. Visual fields are roughly within normal limits. Eyegrounds are normal. The throat, ears, nose and neck are normal. The breasts are entirely flat. The heart, lungs, abdomen and extremities reveal no abnormality, and there are no neurologic abnormalities. The blood pressure is 115 systolic, 85 diastolic. The pulse is 80 and regular. The temperature is 98.8 F. The basal metabolic rate is +14. The blood count is within normal range and analysis of the urine gives negative results. A roentgenogram of the skull shows "moderate digitation over the inner table that would support clinical evidence of increased intracranial pressure. The sella turcica is normal in size and contour." I would appreciate any suggestions as to treatment or references. M.D., Illinois.

ANSWER.—This appears to be an unusual type of alopecia areata. The inquirer does not state what the appearance of the scalp was during the phases of loss of hair. One would want to know whether there was any inflammation present. It is not stated whether hairs, such as of the eyebrows and the eyelashes, participated in the process. It is not uncommon for the latter hairs to fall when all the scalp hairs are lost. Alopecia areata may recur after complete restoration of the hair, but its repetition three times a year for eight years is certainly extraordinary. It would be more usual for the process to be continued for years with new areas forming as old ones become covered with hair.

There is no new literature of significance pointing to either cause or cure of this disorder. The older theories that have been mentioned in the past continue to be invoked. They are the toxic, parasitic, trophic and endocrine theories.

Thallium is capable in proper dosage of effecting the loss of hair such as takes place in this case. Since thallium is incorporated in rat poisons, it may be worth while to inquire into the possibility of accidental thallium absorption. Foci of infection in teeth, tonsils or sinuses may be present. Jacquet stressed reflex irritation as a cause of alopecia areata. He mentioned especially defective teeth. Any source of irritation

should therefore be sought for and eliminated. The basal metabolic rate is slightly above the upper limit for normal, which suggests that the test should be repeated. If the rate remains high in the second test, the administration of compound solution of iodine could be tried.

Syphilis is sometimes said to be a cause of alopecia areata. A blood serum test for syphilis should accordingly be made. If the periods of defluvium could be determined in advance, it might be helpful to use stimulating lotions on the scalp just prior to the expected event. A solution of mercury bichloride in the strength of 1:300 or 1:500 may be useful for this purpose. This application has a drying effect, and because this girl's hair is already dry and brittle castor oil should be added to the lotion. The periodic defluxia suggest as a possibility a peculiar form of erythema multiforme-like condition, which too tends to be periodic in its appearance. It might be well, then, to administer salicylates before an expected defluvium. Lastly, there are reports in the literature of shedding of the skin at regular intervals. This phenomenon is regarded as a form of atavism. This periodic loss of scalp hair may perhaps be likewise regarded. In such a case, nothing proposed would be expected to be of much benefit.

CHRONIC DIARRHEA AND PARATYPHOID BACILLI IN STOOLS

To the Editor:—Could you suggest treatment for a chronic diarrhea of twelve years' duration? Stool cultures show paratyphoid A and B. The patient is passing some blood and is having from eight to twelve stools daily. M.D., New Mexico.

ANSWER.—It must be remembered that diarrhea is always a symptom and never a disease. The finding of paratyphoid bacilli in the stool culture only confuses the issue and means only that this patient is a paratyphoid carrier. Has the patient ever had clinical paratyphoid fever?

The common infectious causes of diarrhea of long standing are amebic dysentery, bacillary dysentery, ulcerative colitis, tuberculous enteritis and parasitic infestation. There are a number of noninfectious causes but relatively few of these would go undiagnosed for twelve years. Sprue must be considered. Pancreatic disease is a possibility. It is not likely that a patient with carcinoma of the bowel would survive for twelve years but with benign neoplasm might do so.

It seems hardly likely that pernicious anemia, leukemia, Addison's disease or one or two other causes would exist for twelve years without being recognized one way or another.

Since there is bleeding there is probably ulceration of the bowel. Proctoscopy to bring the ulcer under observation seems to be the first indication. It is possible that a diagnosis may be made from the appearance of the ulcer. Scrapings from the ulcer may be used for microscopic examination and culture. The proctoscopic examination would determine the advisability or need for x-ray examination of the bowel.

Only when a diagnosis is reached can suggestions for treatment be offered.

Nothing is said about the general condition of the patient. As a rule such patients are emaciated, dehydrated and anemic and show evidence of vitamin deficiency. All of these things must be treated while the fundamental cause is being determined.

ESTROGENIC THERAPY AND BLOOD CHOLESTEROL

To the Editor:—A patient with menopausal symptoms is taking 0.12 mg. of estriol (Theelol) by mouth daily and 10,000 international units of estrone (Theelin) hypodermically twice a week. Blood cholesterol determination by the method of Bloor revealed 303 mg. per hundred cubic centimeters. It is my understanding that the estrogens are closely related chemically to cholesterol. Could the elevated cholesterol reading be accounted for by the estrogenic drugs she is taking? Unfortunately, no cholesterol determination was made before instituting this treatment. The basal metabolic rate before treatment was -25. Symptoms are so numerous and atypical that they cannot be interpreted as suggestive of a hypothyroid state. M.D., Alabama.

ANSWER.—Cholesterol is an essential constituent of all cells and fluids of the body. It belongs to the class of sterols, being chemically related to bile acids, calciferol, estrogen, androgen and progesterone.

The normal limits of blood cholesterol may vary from 120 to 200 mg. per hundred cubic centimeters. There are wide and rapid fluctuations even in the fasting state. Ingestion of fats, butter, eggs and meat increase blood cholesterol. It is said that 50 per cent of pregnant women show an increase in blood cholesterol in the latter half of pregnancy.

In myxedema and hypothyroidism the blood cholesterol ranges from 225 to 750 mg. per hundred cubic centimeters. The patient in question has a blood cholesterol level of 303 mg. Her basal

metabolic rate is —25 per cent, which could easily account for the increased cholesterol.

It is doubtful that the injection of estrogen had much influence on the moderately increased cholesterol in the case mentioned. It is more reasonable to suppose that the moderate hypothyroidism as shown by the basal metabolic rate had a more determining influence on this increase.

The dose of estrogen given to this woman seems large. It is advisable to give 2,000 international units of estrone three times weekly, plus thyroid to the tolerance limit. Larger doses of estrone may be given if this dosage does not produce satisfactory relief.

SCIATIC NERVE INJECTION

To the Editor:—I have learned from German refugees that they use an ampule preparation of antipyrine, scopolamine and atropine for injection into the sciatic nerve in sciatica. Excellent results are claimed from two or three injections. Where can I obtain such material in the United States? What is the technic for sciatic nerve injection?

Alexander Winter, M.D., New York.

ANSWER.—The injection treatment of sciatica is old. The technic of perineural injection in the buttock by the method of Lange of Leipzig (1904) was described by the late D'Orsay Hecht in *THE JOURNAL*, Feb. 6, 1909. A line is drawn from the junction of the sacrum and coccyx to the posterolateral external border of the greater trochanter. A stout needle is introduced at a point a thumb's width outside the junction of the inner and middle thirds of the line mentioned. The patient is asked to tell when the nerve is reached, as he gets a more or less painful sensation all the way to the heel. Today one generally first injects a little 1 or 2 per cent procaine hydrochloride followed by about 80 cc. of physiologic solution of sodium chloride.

Later Cathelin recommended epidural injection of procaine hydrochloride and physiologic solution of sodium chloride in the sacral foramen. The method was fully described by Israel Strauss in *THE JOURNAL*, Dec. 15, 1917. Following the procaine hydrochloride from 60 to 80 cc. of physiologic solution of sodium chloride is injected. By either method three injections two or three days apart are generally required. In 1922 Höglér recommended injection of 10 cc. of 40 per cent warm antipyrine solution in the sacral canal. This method as well as injection of oxygen was described by J. P. Martin in the *Lancet*, May 22, 1926. It would not seem necessary to secure the German ampules mentioned, as a safe amount of scopolamine and atropine might be added to Höglér's antipyrine solution.

DISCOID LUPUS ERYTHEMATOSUS

To the Editor:—A girl aged 14 had a severe case of rhus poisoning three years ago. While the dermatitis on her hands soon disappeared, her face since that time has had many red oval patches covered with moderate slight scale formation. The patches are slightly elevated at their edges, somewhat depressed and atrophic appearing in their centers. There have never been any papules or vesicles in these patches. At present "patulous gland openings" are not readily discernible. There are all told nine patches on her face and three on her scalp, with loss of hair in these regions. The patches on both face and scalp have varied little in shape, size or appearance during the past three years in spite of many attempts at external therapy. The lesions do not itch, which suggested lupus erythematosus to me. These patches are sharply circumscribed. How effective is sodium gold thiosulfate in lupus erythematosus? Is external therapy of any value? The girl is in excellent health otherwise. The Kahn and Pirquet tests are negative. M.D., Illinois.

ANSWER.—The description fits discoid lupus erythematosus quite well. The peglike keratotic plugs may be discovered on the under side of the scales. The negative Pirquet reaction is an exception to the rule for lupus erythematosus but does not rule it out. The only other diagnosis likely would be that of sarcoid; but this seldom occurs at the age of 14. Before undertaking the treatment, however, it would be advisable to have the diagnosis confirmed by an experienced dermatologist.

Assuming a diagnosis of lupus erythematosus, the patient and her parents should be warned against exposure to strong sunlight or ultraviolet rays. The physician must watch also for the appearance of lesions on the upper part of the chest in the V exposed by the clothing to the action of light or on the fingers, hands or arms, for these are the signs of dissemination, indicating a much more dangerous form of the disease.

The urine must be examined frequently for albumin and casts, for kidney involvement is likewise a complication that adds much to the seriousness of the case. Frequent examinations of the blood are also necessary.

It is always difficult to know which method of local treatment may succeed in any given case. The internal administration of quinine in the maximum tolerated dose combined with external application of tincture of iodine to the lesions once a day is

sometimes successful. A test dose of quinine should be given first, to rule out hypersensitiveness to the drug, and the signs of intolerance should be watched for during the treatment. Frequent rests from treatment are made necessary by the local reaction to iodine. Painting the lesions once a week with a mixture of 1 part of phenol and 4 parts of strong lactic acid may be valuable. The burning sensation does not last long and the local reaction is usually not excessive. In resistant cases, freezing with solid carbon dioxide at weekly intervals or less often, according to the strength of the reaction, is a valuable measure and if done with discretion does not make scars any greater than the lesions would leave under any method of treatment. From five to twenty seconds under fair pressure is usually enough. Radium applied superficially is also productive of good results in some cases. A mild reaction is usually necessary to obtain cure of the lesion, and the exact location must be recorded to protect against overdosage on this spot in case of recurrence. In this case also care must be exercised if carbon dioxide treatment is desired at a later date, for skin that has been subjected to the rays of radium or the x-rays may later be sensitive to freezing because of the damage to the blood vessels.

If all these methods of local treatment fail, it may be necessary to use general treatment. Intramuscular injections of bismuth salts may be carried out just as in the treatment of syphilis.

The treatment with salts of gold has become a standard method of management but there are many cases that will yield to milder measures, and gold therapy is not in any sense a minor form of treatment. It is comparable to the arsphenamine treatment of syphilis, and its toxic manifestations are somewhat more serious than those seen after arsphenamine. Leukopenia and sometimes granulocytopenia are of serious import and may be signalized by hemorrhages into the skin or from the mucous membranes. Cutaneous eruptions of various kinds, morbilliform, urticarial or scarlatiniform, may, if the treatment is not promptly stopped, progress to serious exfoliative dermatitis. The urine must be examined for albumin and casts before each dose, and the white blood cells should be counted every week or two. The physician has a double problem, a disease characterized by a tendency to sensitization and a drug which is noted for its sensitizing ability.

CARE OF ABDOMINAL COLOSTOMY

To the Editor:—Judging from my own experience, there is a great paucity of information on how to care for a patient with an abdominal colostomy. I would like to know how to advise a patient what to do to alleviate a condition which usually makes the victim virtually a pariah. 1. What position should he take for evacuation, lying down prone, or should suction be employed? How about a pus basin? 2. What diet is recommended? 3. Is irrigation recommended at regular intervals? 4. If the opening is made through the rectus abdominis, may this act as a sphincter? What is the objection? 5. Pastes are used to seal the colostomy pad. What is aluminum paste? 6. What can be done about loose stools, flatus, fecal odor and the like? 7. Is there a good colostomy pad on the market?

Thomas I. O'Drain, M.D., Philadelphia.

ANSWER.—A patient with an abdominal colostomy is not ordinarily in any way interfered with in the performance of his ordinary social or business duties. All that is required is a little attention to a system, in which even the patient is able to carry on as well as anybody.

1. The patient is usually advised to take an enema of three glasses of water every morning, lying on the back end of the bathtub. A catheter inserted into the colostomy is threaded through an ordinary baby's nipple, the sucking end of which is inserted into the colostomy and acts as a water valve. After the three glasses of water has been taken the patient sits up, places a basin beneath the colostomy, gently massages the abdomen and thoroughly evacuates the large bowel.

2. The patient is advised to abstain from laxative food for the first few months after operation, taking only enough fruit and vegetables and cooked fruit to insure reasonably easy movements. It is not well for the patient to have diarrhea. After about six months the patient is usually able to eat a general diet.

3. Irrigation is advocated every morning after breakfast, the average time for its completion being about one-half hour.

4. Opening of a colostomy is possible through the rectus muscle, but this does not act as a sphincter. There is no objection to bringing it through the rectus muscle. The only criterion of its position is to get it away from the umbilicus and the anterior superior spine.

5. A paste does not need to be used to seal the colostomy. The aluminum paste is used in ileostomies and consists of a mixture of aluminum powder with wool fat. Aluminum powder alone is often dusted around the ileostomy.

6. Loose stools can be controlled by a decrease of fruit and vegetables and the administration of some powders consisting of

15 grains (1 Gm.) of calcium and bismuth subcarbonate. If there is too much flatus, the patient's diet should be somewhat restricted in carbohydrates. Fecal odor is not present if the enema is carried out properly, because there is no discharge from the bowel for twenty-four hours after it has been once emptied.

7. Colostomy cups are difficult to keep clean and free from odor. The patient may be advised to surround the colostomy with a circle of petrolatum gauze, to put a gauze pad over this and then pull up over his abdomen a cheap elastic belt which can be laundered. This combination is effective and hygienic.

UTERINE BLEEDING

To the Editor:—A white woman, unmarried, aged 24, 5 feet 8 inches (173 cm.) tall, weighing 135 pounds (61.2 Kg.), had uterine bleeding daily in varying amounts for four years. The onset of this bleeding occurred following her mother's death. The patient believes that she suffered some nervous shock as the result. During the four years she has had a variety of glandular treatments, mainly injectable materials. Several capable gynecologists have treated the patient for periods of six months or more during her illness. At no time have there been cramps or severe hemorrhage. She has been entirely unable to determine periods. There has been no loss of weight nor any other apparent physical disability. Physical examination has revealed nothing unusual. Pelvic examination is apparently negative. Treatment previous to my seeing the patient has included a dilation and curettement without results. Even radium insertions were tried without success. Since she has been under my care whole ovarian substance, gonadogen (Upjohn) and corpus luteum have been used without success. This patient has become discouraged to the point that she desires a hysterectomy. Can you suggest some way of preventing this catastrophe?

Alfred Breuer, M.D., Cleveland.

ANSWER:—Before hysterectomy is resorted to, two medications should be tried. The first is thyroid. One or more basal metabolism studies should be made to rule out hyperthyroidism before thyroid therapy is begun. At least one month's trial with thyroid should be given. One grain (0.065 Gm.) should be taken daily for a week and if untoward symptoms do not arise, 2 grains (0.13 Gm.) should be taken daily. If this treatment does not check the bleeding, the male hormone testosterone propionate may be administered. This patient may be given relatively large doses; 25 mg. of testosterone propionate may be given hypodermically three times a week for four weeks. If the bleeding stops, further medication need not be given unless the irregular bleeding returns. If the bleeding continues in spite of the twelve injections, from six to twelve more injections may be administered, the same dosage being given. When more than 450 mg. of testosterone propionate is given there is some likelihood that signs of virilism will appear. These are growth of hair on the face, lowering of the pitch of the voice and slight enlargement of the clitoris. There is also the strong possibility of a gain in weight and the development of an acneform eruption. However, all these signs disappear after the medication is stopped.

Since testosterone propionate therapy is usually of temporary benefit, the administration of this hormone will most likely have to be repeated from time to time. However, in some cases, for some as yet unexplained reason, normal menstruation often returns after this form of therapy.

GONORRHEAL SALPINGITIS

To the Editor:—A married woman aged 21 has had gonorrheal salpingitis for the past nine months. Two other physicians besides myself have advised removal. She and her parents, who are intelligent, are much opposed to any operation. I am therefore writing for advice as to whether there is any treatment which will offer her a cure without the operation. The patient is in fairly good general condition, only slightly anemic and undernourished. Pelvic examination reveals involvement of both tubes, but it has not extended beyond as far as can be determined. An osteopath has guaranteed a cure by giving her electrical treatments of some type. Unless we can offer her some hope of a cure without an operation she will undoubtedly take these treatments.

G. H. Moranville, M.D., Winton, Wyo.

ANSWER:—Eighty-five per cent of patients who suffer from a first attack of gonorrheal salpingitis progress to clinical recovery without recourse to operation. The first measure of importance is to make certain that the patient is not exposed to reinfection, for recurrent infections are more stubbornly resistant to treatment. All sex life should be avoided during the active stage; later indulgence should be limited, and always with condom protection. Rest in bed, care of the bowels, control of pain with codeine and employment of Priessnitz dressings if discomfort is great will usually result in ultimate recovery. Elliott treatments are helpful after the most acute stage, but they are not the cure-all which many have assumed. Sulfanilamide medication is not to be depended on implicitly, yet it is often successful and should be given a trial in all severe cases.

MILROY'S DISEASE

To the Editor:—Two sisters, aged 31 and 36 respectively, have Milroy's disease. Their symptoms began several years ago, at which time they developed painless swelling of both lower extremities. The edema is of the pitting type and extends up to the knees. The older of the two now has swelling of both legs resembling elephantiasis, but no other symptoms. The basal metabolism is normal and results of blood and kidney studies are normal. The younger sister has developed erythematous plaques at the flexor surfaces of both elbows, knees and thighs. She also complains of pains between the shoulder blades. Any information regarding the treatment of this condition will be appreciated.

P. E. Schwartz, M.D., Portland, Conn.

ANSWER:—There is no treatment that will accomplish a cure in Milroy's disease. Various surgical procedures, administration of thyroid and other endocrine substances, and diets have all been tried and have failed. It has been found that rest in bed will decrease the edema and that mechanical relief may be obtained by the application of tight bandages to the lower extremities. Such bandages have been worn for many years by patients with this disease. The condition is not incompatible with long life and good health apart from the mechanical discomfort and the unesthetic appearance.

It seems unlikely that the pain described in this case is a direct result of the disease. Occasionally the skin undergoes changes due to pressure and stretching. Such changes must be treated symptomatically.

GENTIAN VIOLET AND BORIC ACID OINTMENT FOR BURNS

To the Editor:—Will you please supply information on the use of boric acid ointment after aqueous gentian violet has been used in the treatment of burns. It has been brought to my attention that these two preparations are incompatible. If so, please give reasons.

R. W. Bourke, M.D., East Walpole, Mass.

ANSWER:—Gentian violet is usually used relatively soon after the patient has suffered a burn. It becomes fixed by the tissues and forms a superficial crust. After the removal or separation of this crust various substances are used depending on the condition of the tissues underneath the crust. This condition is dependent, of course, on the depth of the burn. Boric acid ointment, if it is used, would be applied after such separation has occurred or after fixation of the gentian violet by the tissues. Even were it to be used early, that is, soon after the gentian violet has been applied, chemical incompatibility which would have a detrimental effect has not been determined.

ALMOND OIL

To the Editor:—Is there any known medical use for sweet almond oil? Can it be safely used as a laxative? If so, in what dosage? The almond is one of the oldest nuts known to man and has been cultivated for thousands of years. Is there any evidence that it was used for medical purposes in ancient times? Some of my friends claim that they have found the almond, and almond oil, of value in arthritis. Is there any basis to their claims? Would its high vitamin and protein content make it of value in preparation of candy for children?

M.D., California.

ANSWER:—Sweet almond oil possesses the emollient properties of the other fixed oils so that it could be used to soften chapped hands and for other inflamed conditions of the skin. It is also useful for the emulsification of volatile oils, as a base. There is little or nothing on which to base a claim of efficacy in cases of arthritis. The oil can be used as a safe laxative in doses of from 4 to 8 cc. The nut should be good for making candy but would be no better than other nuts.

DUODENAL INSUFFLATION OF OXYGEN FOR INTESTINAL DISTENTION IN PNEUMONIA

To the Editor:—Have high concentrations of oxygen instilled directly into the duodenum through a Levine tube ever been used as a method of treatment of patients with pneumonia complicated by a marked distention which has failed to respond to the ordinary methods of treatment of distention, such as stupes, enemas, rectal tube, medication and the like? Would you give me references to any articles on this subject?

Bernard E. Cohler, M.D., Chicago.

ANSWER:—No one seems to have proposed duodenal insufflation of oxygen in the treatment of intestinal distention in pneumonia. This might be a dangerous procedure. Distentions in pneumonia should be classified as those involving the left upper quadrant of the abdomen or stomach and those involving the intestine and colon. The former are relieved by aspiration through a Levine tube or by Wangenstein's suction device. In the intestine they are usually an expression of profound poisoning and are frequently associated with bacteremia. Unless the infection is overcome they are ultimately uncontrollable.

Jacob Fine and his co-workers, who introduced the oxygen inhalation therapy of postoperative distentions, have shown, in several valuable contributions, the mechanism by which this is accomplished (Fine, Jacob; Frehling, Stanley, and Starr, Arnold: Experimental Observations on the Effect of 95 Per Cent Oxygen on the Absorption of Air from the Body Tissues, *J. Thoracic Surg.* 4:635 [Aug.] 1935. Fine, Jacob; Banks, B. M., and Hermanson, Louis: The Treatment of Gaseous Distention of the Intestine by the Inhalation of 95 Per Cent Oxygen, *Ann. Surg.* 103:375 [March] 1936. Fine, Jacob; Sears, J. B., and Banks, B. M.: The Effect of Oxygen Inhalation on Gaseous Distention of the Stomach and the Small Intestine, *Am. J. Digest. Dis. & Nutrition* 2:361 [Aug.] 1935). Inhalation oxygen therapy in pneumonia, which increases the oxygen in the respiratory and gastrointestinal tracts, lessens the incidence of distention. With the prompt and efficient use of chemotherapy and serum therapy abdominal distention is encountered much less frequently than formerly.

SEROLOGICALLY NEGATIVE SYPHILIS AND PREGNANCY

To the Editor:—A woman aged 28 states that she and her husband were treated for syphilis in 1933. They received only about four months of treatment and were discharged. In 1938 the husband's Wassermann reaction was four plus and I gave him two years of continuous treatment, after which it was still four plus and I considered him Wassermann fast. The wife's blood and spinal fluid have been negative on six examinations at intervals of two months. At present the woman is about eleven weeks pregnant; Wassermann, Kahn and Kline reactions are negative; the husband was considered Wassermann fast seven months ago—should I give her any treatment? I did not obtain a positive blood test on her and complete physical examination is essentially negative.

M.D., Missouri.

ANSWER.—Comment is not made in regard to the status of the husband's spinal fluid. It seems unwise to consider him Wassermann fast without knowing the status of the spinal fluid. The fact that the wife's serologic reactions have been repeatedly negative during the past year is not sufficient evidence to discard the need for treatment if she is now in the early phase of pregnancy. Studies have shown slightly less than 20 per cent of women with latent syphilis and who have a negative serologic reaction develop complications as a result of the syphilis during a pregnancy. In other words, it appears advisable to urge this woman to undergo a course of treatment as a means of doing all within her power to have a normal child.

RED CELL VOLUME MEASUREMENTS

To the Editor:—I desire to do red cell volume measurements using either the Sanford and Magath centrifuge tube or the Wintrobe hematocrit tube. If the Wintrobe tube is satisfactory for the combined determination of the sedimentation of velocity and the volumes of the packed red cells I should prefer the Wintrobe tube. Will you advise me whether the Wintrobe tube is sufficiently rugged so there is little or no breakage in the centrifuge? Are the cell volumes as determined by this tube considered accurate? How many times gravity must the centrifugal force be in order to secure reliable volumes in from thirty to sixty minutes' centrifuging time? What is the lowest priced centrifuge which would give satisfactory determination (with an alternating electric current of 110 volts)? Would you advise me also as to the dealer from whom such a centrifuge may be obtained? The equipment is wanted for a small laboratory where the volume of work is not heavy. It is proposed to use this centrifuge only for the red cell volume determination.

Thomas P. Haslam, M.D., Council Grove, Kan.

ANSWER.—Accurate red cell volume measurements are obtained with both Sanford-Magath and Wintrobe hematocrit tubes. The cell volume varies slightly with the anticoagulant, the centrifugal force and the time of centrifugation. An isotonic anticoagulant (1 cc. of a 1.4 per cent sodium oxalate solution to 5 cc. of blood) is employed with the Sanford-Magath tube. The small Wintrobe tube requires a dry anticoagulant. If heparin or a dry oxalate mixture is used, the readings with the Wintrobe and the Sanford-Magath tubes are the same. The dry anticoagulant is made as follows: Three Gm. of ammonium oxalate and 2 Gm. of potassium oxalate are dissolved in 100 cc. of distilled water; 0.08 cc. of this solution is run into a test tube and dried completely. Exactly 2 cc. of blood is added and mixed. The Wintrobe tube is filled with this oxalated blood. The cells shrink if potassium oxalate only is used, so the reading is multiplied by 1.08. The Wintrobe tube can be used for the sedimentation rate also and is quite rugged.

Any centrifuge is satisfactory if properly calibrated. The small clinical centrifuges obtainable from any laboratory supply house for about \$35 give good results. The blood is usually spun at 3,000 revolutions per minute for from thirty to sixty minutes.

The best procedure is for each laboratory to determine the mean cell volume in normal persons with the technic employed. To find this, determinations on ten obviously normal individuals are done and the normal mean is calculated. The reading for any abnormal blood is compared with this normal value.

INCISIONAL HERNIA

To the Editor:—A patient was operated on in 1924 for appendicitis through a right rectus incision. Recently the patient noticed a small swelling in the scar while straining at stool. There was no pain at the time and the only occasion that the patient can remember having a definite pain in the scar was six months previously when there was moderate pain for a few minutes while lifting a weight of about 75 pounds. Is it probable that breaking of the scar occurred six months previous to the appearance of the hernia or that it occurred without any pain a few days before being noticed?

G. E. Perkins, M.D., Norton, Va.

ANSWER.—Usually an incisional hernia develops gradually as the result of the many different traumas from strain and exercise in daily activity. It is gradually enlarged. It is not improbable that one heavy lift six months previous to its being noticed has been a stronger factor than the other traumas, but it would be difficult to prove this, perhaps impossible.

CYSTINE-RICH PROTEINS IN TISSUES

To the Editor:—Kindly advise me what polymeric polysulfides are found in the human body.

G. W. Tyrrell, M.D., Perth Amboy, N. J.

ANSWER.—There are no "polymeric polysulfides" found in the human body in the strict sense of the term. The substances which might possibly be classified as near to "polymeric polysulfides" are those proteins which are rich in cystine. Cystine is a disulfide and proteins contain various amounts of cystine. Hair, skin, finger nails and toe nails are particularly rich in cystine as compared with other tissues.

TONSILLECTOMIES IN DIONNE QUINTUPLETS

To the Editor:—The query regarding the justification of tonsillectomies in the Dionne children (*The Journal*, August 10, p. 476) emphasizes a practice which seems to me overdue. Under the circumstances described, Dr. Drafec could hardly have proceeded otherwise than he did. Repeated attacks of acute tonsillitis and swelling of the cervical lymph nodes seem to be the only important indications for tonsillectomy. The opinion of the consultant that there "is palpable evidence that the infection from their tonsils is spreading and at any time may get into the whole system, producing disastrous results . . ." is hypothetical. Such unguarded statements of direct responsibility for dire consequences "unless their tonsils and adenoids are removed at once" have no doubt been responsible for what is called "wholesale tonsillectomy" by the New York physician who questioned the procedure. The quintuplets are at the age when "normal" hypertrophy of lymphoid tissue is present, so that "very large" tonsils or the fact that they "nearly touch each other" may not be abnormal. Many studies referred to in recent papers by Dr. Havens and myself (*Focal Infection and Systemic Disease: A Critical Appraisal*, *The Journal*, Jan. 6, 1940, p. 1; *Infectious Diseases: Review of Significant Studies in 1939-1940*, *Arch. Int. Med.*, August 1940) support our opinion that tonsillectomy performed in children for such supposed dangers is not justified and that large numbers of persons who have tonsils are no worse off than similar groups who have not. Although no figures are available, it would also seem that the risk of serious complications resulting from the operation itself is about as great as the probabilities mentioned in the consultant's opinion.

Hobart A. Reimann, M.D., Philadelphia.

REACTIONS TO SACRAL ANESTHESIA

To the Editor:—In the *Journal* for July 27, page 322, there appears an inquiry concerning "reactions to sacral anesthesia and pernicious anemia." The interrogator stated that "sacral anesthesia" was performed in the case in question. The reply is based on the presumption that spinal anesthesia had been performed. The term "sacral anesthesia," as conventionally used, certainly does not apply to the method of subarachnoid injection. It implies the use of technics for producing regional anesthesia by any one of the various extradural approaches, such as transsacral, presacral or caudal methods. Presumably it was by some extradural method that the interrogator produced anesthesia in the case in question, and it was to learn whether such an anesthetic procedure is capable of causing degeneration of the spinal cord that he made his inquiry. The reply to the inquiry failed to give any information regarding the significant point involved, the incidence of subarachnoid lesions due to extradural injections of anesthetic agents, and furthermore it seems an inadequate statement as to the incidence of neurologic sequelae of spinal anesthesia. Is it possible to say without qualification, for example, that any administration of spinal anesthesia "may be followed by . . . degenerative lesions of the spinal cord"? Such a statement fails to discriminate between the toxic or traumatic factors which are present in certain particular instances and the inherent factors of subarachnoid anesthesia itself. In illustration, it would not be fair to state that "any administration of nitrous oxide may be followed by degenerative lesions of the cortex," since such lesions occur as sequelae of the misuse rather than the correct use of the agent under discussion.

Alden W. Squires, M.D., New York.

Book Notices

The Soldier's Heart and the Effort Syndrome. By Sir Thomas Lewis, C.B.E., F.R.S., M.D., Physician University College Hospital, London. Second edition. Cloth. Price, 8s. 6d. Pp. 103. London: Shaw & Sons, Ltd., 1940.

This book was published shortly before the close of the war of 1914-1918. In his introduction to the present edition the author states that "the magnitude of the problems presented by this condition from the standpoint of army wastage, invalidism and pensioning will be realized when it is known that not less than 70,000 soldiers had reported sick and were classed as cardiovascular by the summer of 1918; and 44,000 cases of 'effort syndrome' became pensioners. Actually no more than one out of six of these soldiers suffered from disease of the heart. The rest were effort syndrome cases. The problem is the same in this war as in the last; and if this war continues as the last did, it will not be of much less magnitude than it was in that." Lewis proposed the term "effort syndrome" to replace that of "disturbed action of the heart." The new term was to be used to express a group of symptoms and signs which resemble those of physiologic fatigue following exercise in the absence of a definite disease of the heart, lungs or thyroid. The etiology of the effort syndrome, or neurocirculatory asthenia, as physicians in the United States prefer to call it, has never been clearly elucidated. In discussing the contributing etiologic factors he mentions that 57 per cent of the soldiers invalided for this cause were recruited from sedentary or light occupations. Many of these men showed defective physical development and frequently a defective nervous organization. Among the exciting factors Lewis stresses those of strains of training and service. It appears that infection is an important element. Among the British soldiers rheumatic fever was of the greatest importance. Other infections were pneumonia, pleurisy, influenza, bronchitis and dysentery. Infectious diseases, the author estimates, have played a chief part in promoting the syndrome in at least 50 to 60 per cent of the cases. Lewis dismisses the question of "heart strain" by stating "neither in civilian nor in military practice have I seen a patient in whom the evidence for heart strain as a primary cause of breathlessness could be regarded at all convincing." Few soldiers dated the first onset of symptoms to an unusual strain. Such a history was obtained in only five of 558 cases. X-ray studies showed the heart to be on the average smaller than normal. Tobacco, alcohol and venereal diseases played an insignificant part in the causation of the effort syndrome. The most important problem confronting the medical personnel in sorting cardiovascular cases is to differentiate effort syndrome from organic heart disease. Cardiologists will be particularly interested in the chapter on diagnosis of disease of the heart in soldiers. In the author's experience murmurs are to be heard over the precordium in more than half of the soldiers sent to military hospitals for actual or supposed cardiac disorders. The most frequent of these is the cardiorespiratory murmur, which is really a breath sound accompanying a cardiac systole. It is usually associated with a rapid heart action and has no diagnostic or prognostic significance. The author also warns against attaching significance to the pulmonary systolic murmur heard over the second or third left cartilages. On the other hand a palpable thrill and cyanosis suggest the probability of pulmonary stenosis or patent ductus arteriosus. Aortic systolic murmur is of no significance. Diagnosis of mitral regurgitation is justified in the presence of a systolic murmur and a history of rheumatic fever. Rheumatic fever and chorea were responsible for 54 per cent of cases of aortic regurgitation and of 65 per cent of mitral stenosis. There is a valuable chapter on examination of recruits and on medical reports on discharged soldiers.

The author apparently does not regard this interesting syndrome as a primary cardiac condition. He feels that abnormal anxiety must be regarded as a real and important contributing cause. In discussing the treatment he emphasizes that understanding of the relations between nervous states and effort syndrome is essential to successful treatment and deserves further and careful study. The most important contribution by the author to this subject is the method of treating these soldiers by graded exercises. These consist of drills or games so graded that no man is submitted to severe exercises before his tolerance

is thoroughly established. The method is useful for both sorting trained soldiers for work or duty and as specific therapy. Under this method of treatment the hospital stay of patients was reduced from the average of 5.3 months to five or six weeks. The enormous experience of Sir Thomas Lewis in the past war together with his background as a noted cardiologist adds particular importance to this monograph.

Artificial Pneumothorax: Its Practical Application in the Treatment of Pulmonary Tuberculosis. Contributions by Saranac Lake Physicians to the Studies of the Trudeau Foundation. Editorial Committee: Edward N. Packard, M.D., John N. Hayes, M.D., and Sidney F. Blanchet, M.D. Foreword by E. R. Baldwin, M.D. Cloth. Price, \$4. Pp. 300, with 85 illustrations. Philadelphia: Lea & Febiger, 1940.

Those interested in collapse therapy are fortunate in having such a logical statement of the broad principles underlying the employment of artificial pneumothorax in the treatment of pulmonary tuberculosis. The historical background is brief but clearly descriptive of what has gone before, and the facts presented serve as a base line from which the operation may intelligently proceed with the assurance of past results.

The chapter on physiology is well presented and supplies the fundamental physiologic phenomena which should be understood by every one who practices or contemplates the practice of pneumothorax. In the chapter on selection of cases, indications and contraindications are briefly but clearly presented. The authors obviously recognize the danger of drawing hard and fast lines with dogmatic recommendations. They frankly state that experience on the part of the operator serves as a valuable supplement to any proposed criteria for the selection of cases. On the whole, this chapter may be accepted as a valuable aid to the experienced operator and a safe guide for the novice. That part of the chapter dealing with nontuberculous disease is logical and conservative, cautiously safeguarding the inexperienced and leaving the experienced operator an open road for careful trial in questionable cases. A more detailed discussion of pneumothorax in ambulatory cases would have been helpful to those who are trying to solve this question. The chapter devoted to the value of the x-rays in artificial pneumothorax should be carefully studied, in that the x-ray observations should be closely linked with the symptoms and signs before decisions are reached and should serve as a guide subsequent to the induction of pneumothorax. Such a study materially aids in the classification and selection of cases. After pneumothorax is induced, the continued use of the x-rays is valuable in determining the results and directing the course of treatment. New developments in the contralateral lung may be observed and complications such as adhesions, pleural effusions, empyema, mediastinal hernia and spontaneous pneumothorax recognized. The importance of the x-rays in artificial pneumothorax is well shown and perhaps the closing statement is warranted: "The x-ray is not the handmaiden but the mistress of therapeutic pneumothorax." The chapter on apparatus will serve as a valuable guide to those who contemplate the use of pneumothorax as a therapeutic measure. The same may be said of the chapter on technic. The authors are to be commended for pointing out the fact that the technic may be perfectly safe while remaining relatively simple. The chapter on accidents during operation offers a brief but ample discussion of the possible accidents, including the troublesome question of gas embolism and pleural shock. The means of recognition and methods of treatment are well presented. A careful study of the remaining chapters reveals the same concise but brief treatment of the various phases of this valuable therapeutic procedure, including the many additional problems arising in the course of its application. The subjects of the remaining chapters are physical signs in artificial pneumothorax, conduct of treatment, pleural complications of artificial pneumothorax, results of treatment of tuberculous empyema, the opposite lung in artificial pneumothorax, bilateral artificial pneumothorax, artificial pneumothorax and the heart, the duration and termination of treatment, the pathology of the tuberculous lung treated by artificial pneumothorax, oleothorax, thoracic surgery in relation to artificial pneumothorax, and results of treatment by artificial pneumothorax.

This work is recommended by its source, and a thorough study of its contents warrants the conclusion that the authors

have sustained the high quality which characterizes the other publications coming from the Saranac group. This publication constitutes a valuable handbook on artificial pneumothorax and it is doubtful whether so much information in concise form is to be found in any other publication.

The Vitamin B₁ Content of Foods in Terms of Crystalline Thiamin. By Lela E. Booher, Senior Nutrition Chemist, and Eva R. Hartzler, Junior Chemist, Foods and Nutrition Division, Bureau of Home Economics, United States Department of Agriculture Technical Bulletin No. 707. Paper. Price, 5 cents. Pp. 20. Washington, D. C.: Supt. of Doc., Government Printing Office, 1939.

This valuable bulletin gives the vitamin B₁ content of some 100 foods commonly included in the American dietary in terms of international units and micrograms per hundred grams of food (edible portion). This compilation of data is especially useful since the vitamin B₁ content of foods reported in the earlier literature was often expressed in units not always convertible to international units. The daily requirement of a normal adult for vitamin B₁ is considered to be about 400 international units. From this bulletin one can learn which foods are excellent, good, fair or poor sources of vitamin B₁ and select a diet accordingly. Foods listed in the class "excellent" providing no less than 150 international units of vitamin B₁ per hundred grams are dried lima beans, cow peas, rolled oats, peanuts, pork chop (lean portion), smoked ham and soybeans. Foods listed in the class "good," providing from 100 to 150 international units of vitamin B₁ per hundred grams, are fresh lima beans, dried navy beans, egg yolk, dried milk, peas, walnuts and whole wheat. Foods listed in the class "fair," providing from 30 to 100 international units of vitamin B₁ per hundred grams, are asparagus, beef (the lean portion), broccoli, brussels sprouts, cauliflower, chicken (dark meat), corn meal (yellow), corn (sweet), kale, lamb (lean portion), liver, mustard greens, okra, peanuts (roasted), pineapple, potatoes, prunes (dried), spinach, sweet potatoes, turnip greens and wheat (shredded).

Fortschritte der Allergielehre (Forschung und Klinik). Unter Mitwirkung von G. Dahlberg et al. Herausgegeben von P. Kallós. Cloth. Price, \$10. Pp. 400, with 38 illustrations. New York: Nordemann Publishing Company, Inc.; Basel: S. Karger, 1939.

Although the attempt to summarize the recent advances of allergy and immunology in all the fields of medicine is a commendable endeavor, this work is somewhat confusing, owing to the fact that each chapter is written by a different person. Many of the chapters conform to the philosophic flights of fancy one has learned to expect of German "armchair" scientists. The chapter by Haurowitz is excellent and summarizes all the recent work on antigens, antibodies and antigen-antibody reactions. It is worth the price of the book to one interested in this field. Harley's method of treating hay fever may be applicable to conditions in England but would be a failure if adapted to the treatment of ragweed pollinosis as it occurs in the United States. Lowenstein's chapter on allergic diseases in ophthalmology is good. The book is full of the names of foreign proprietaries, the use of which the authors advise. It is much too difficult to remember these names and the reviewer, for one, prefers to use simple pharmacopoeial preparations. We cannot agree with Unditz (who authored the chapter on "Pharmakotherapie") that calcium is practically the cure-all for allergic diseases. One thing that this book illustrates is that allergy has involved every branch of medicine and has succeeded in explaining many previously unclear and perplexing phenomena.

Family Allowances: Children Must Be Fed. Paper. Price, 3d. Pp. 32, with illustrations. Aylesbury, Buckinghamshire: Lancet, 1940.

The fact that "in England today there are children going so short of proper food that their health and growth are being damaged" leads the London *Lancet* to believe that a medical problem is created. Wages are paid on the theory that a man is entitled to "at least a 'living wage'" to cover a "normal family" with three children. But only 3.9 per cent of men have more than three children and these are responsible for 23 per cent of the children. The present so-called living wage does not afford adequate food for a family of even five and is very inadequate for additional children. Since the first item of economy in the family budget is usually food, a large amount of malnutrition results which affects not only the children but

even more frequently the mother and is reflected in a high maternal death rate. The *Lancet* therefore urges a family allowance based on the number of children in the family. Tentative movements in Great Britain and in France, Belgium, Germany, New South Wales and New Zealand provide allowances for the support of children. Three ways of paying such allowances universally have been tried; the whole burden may be put on the employers or on taxation or through a contributory scheme in which employers, workers and the state share. So far from believing that a state of war is an objection to undertaking such a plan, it is urged that "now is the time to prevent the onset of widespread poverty, with all the nutritional disasters which it creates."

Practical Food Inspection. By C. R. A. Martin, M.R.San.I., Chief Sanitary Inspector, Whitstable. In Two Volumes. Volume I: Meat Inspection. Volume II: Fish, Poultry and Other Foods. Second edition. Cloth. Price, 15s.; 12s. 6d. Pp. 316, with 138 illustrations by the author; 275, with 58 illustrations by the author. London: H. K. Lewis & Co., Ltd., 1940.

These two volumes are by a practical inspector who makes excellent use of "data collected during routine inspectorial work extending over a period of many years." The first edition (November 1932) was apparently well received and made this revision with the introduction of new material necessary. This work contains information valuable not only to the inspector with scientific training but also to those without that background, as it does not include highly technical details. The first volume, on meat inspection, is thorough and well done. It does not attempt comprehensive coverage of physiology or anatomy, and the material on antemortem inspection is limited but all the information given is of fundamental importance. The suggestions as to a system of meat inspection could well be carefully considered for adaptation to intrastate meat by state and municipal officials to supplement federal meat inspection of interstate meat. The sections on diseases and pathologic abnormalities are well done from the standpoint of the meat inspector and the procedure followed of defining the condition or disease, stating the etiology, giving the postmortem appearances and finally and in definite terms rendering "judgment" is particularly convenient for inspectors. The second volume covers fish and poultry briefly. The lack of detail is somewhat surprising for a country which consumes the amount of fish that Great Britain does. But even more briefly are "other foods" covered, which clearly reveals the author's primary interest in meat inspection. Perhaps this is judging from the standpoint of American industry and when, for example, the size of the British canning industry is considered it is not so surprising that only eleven pages is devoted to it. Each volume contains a short glossary of terms and an index.

Clinical Toxicology. By Clinton H. Thienes, M.D., Ph.D., Professor of Pharmacology and Head of the Department of Pharmacology, School of Medicine, University of Southern California, Los Angeles. Fabrikoid Price, \$3.50. Pp. 309, with 7 illustrations. Philadelphia: Lea & Febiger, 1940.

As stated in the preface, the author's purpose in writing this book was to provide a classroom textbook and a guide for the general medical practitioner. No attempt has been made to discuss in detail the chemistry, pharmacy or general pharmacology of poisons. The author has departed from the usual scheme of classifying poisons according to their chemical composition and has grouped them according to their mechanism of action or chief presenting symptom. From the standpoint of classroom instruction, such a system appears to be more satisfactory than classification on the basis of chemical behavior. It is not without imperfections, however. Thus one finds phenol discussed under three separate categories: as a corrosive poison, as a convulsant and as a kidney poison. Atropine is listed both as a cerebral convulsant and as a nerve depressant. Such subdivision, although pharmacologically accurate, might prove to be just as confusing to the student as are the incongruities resulting from the chemical classification of poisons. The consideration of the toxicology of specific poisons, which occupies three fourths of the book, is treated in a clear and concise manner. Discussions of diagnosis and specific treatment are reasonably adequate. One might disagree with the author concerning the relative importance of certain toxic agents. Thus it seems difficult to justify the space given to

considerations of poisoning by absinthie, curare, histamine, poke root and phenylhydrazine in view of the omission of more common poisons such as the newer chlorinated solvents (trichloroethylene, tetrachlorethylene, ethylene dichloride), sulfur dioxide, carbon dioxide, chlorine gas, formaldehyde, santonin, potassium permanganate and metals such as antimony, cadmium, copper and silver. The student or physician who desires additional information beyond that provided in this elementary textbook will be disappointed by the author's failure to cite references to the sources of his information. The last fourth of the book is concerned with general principles for the treatment of poisonings, with diagnosis of poisoning according to the symptoms produced and with chemical technics for the detection and estimation of poisons. The analytic methods given are mostly elementary qualitative procedures and, while quite satisfactory for purposes of class instruction, are hardly adequate for clinical diagnostic use. In a recent review of another manual of toxicology, Prof. H. C. Wood aptly remarked that we were apparently experiencing an epidemic of "toxicologitis." Of the four books on the subject which have been published in this country during the past year, this one is probably the most satisfactory for its intended purpose of providing a brief textbook for medical students and clinicians.

Pathologisch-physiologische Grundlagen der Chirurgie. I: Der Stütz- und Bewegungsapparat. Knochengelüste, Gelenke, Muskeln, Sehnen, Sehenscheiden und Schleimbeutel. Von Dozent Dr. med. habil. Herbert Junghans, Oberarzt der Chirurgischen Klinik und der Poliklinik der Universität Frankfurt a. Main. II: Harn- und männliche Geschlechtsorgane. Von Dozent Dr. med. habil. Ernst Kraas. III: Darm und Bauchfell. Von Prof. Dr. Victor Orator, Chefarzt am Stadtkrankenhaus Dulsburg. Paper. Price, 9.60 marks; 4.20 marks; 8 marks. Pp. 118; 46; 92, with 8 illustrations. Leipzig: Johann Ambrosius Barth, 1939.

This monograph is in general well organized and written. The field is well covered, though several topics could be included with benefit; e. g., bone tumors are not discussed. The author includes some original work, observations and ideas, and presents problems which bear further research work. The bibliography is large, but there are several glaring omissions.

Part II is well written but in many places incomplete. It is brief, to the point and well subdivided, but the many omissions keep it from being a good monograph. The kidney in relation to hypertension (Goldblatt kidney) is not mentioned. The entire chapter on the male sex organs is only two and a half pages long. The innervation of these organs is not mentioned. The endocrine aspects of prostatic hypertrophy are not discussed. Among other subjects missing are hermaphroditism and eunuchoidism.

Part III is the least well written of the three monographs. The German is difficult to read, the punctuation is poor and there are many typographic errors. While some normal physiologic processes of digestion are thoroughly discussed, there are so many subjects omitted that the book is hardly worth the time taken to read it.

Treatment of War Wounds and Fractures with Special Reference to the Closed Method as Used in the War in Spain. By J. Trueta, M.D. With a foreword by H. Winnett Orr, M.D., F.A.C.S. Cloth. Price, \$2.50. Pp. 146, with 48 illustrations. New York: Paul B. Hoeber, Inc., 1940.

Dr. Trueta reports on the use of closed plaster casts in the treatment of war wounds. He believes that the principal value of the cast is the immobilization which it affords. This allows local venous and capillary thrombi to form which prevent and delay the spread of infection and allow new capillaries to form. Repeated dressings break these down. The plaster maintains a constant beneficial pressure on the wound. He believes that biologic antagonism between the different groups of bacteria renders impossible the colonization of pyogenic organisms and so slows up the septic process. He found *Bacillus pyocyaneus* in abundance in a number of cases. The immediate care of the wounds is the most important part of the treatment. The steps included are anesthesia, débridement, reduction of the fracture, light packing of the wound with gauze (not with petrolatum as advocated by Dr. Orr) and prophylactic tetanus antitoxin. Then the cast is applied and changed only if the odor becomes unbearable. Failures, he believes, result from inadequate surgical management of the wound before the cast is applied. Special problems in the various regions are discussed. Advantages of the method peculiar to military surgery include the ease of

arranging early care and transportation and the small amount of equipment and after-care needed. The treatment of 1,073 compound war fractures with mortality in only six cases is proof of the ability of the author and the soundness of his method.

Clinical and Experimental Investigations on the Creatine Metabolism. By Erling Wang. *Acta medica Scandinavica*, Supplementum CV. Paper. Pp. 338, with 38 illustrations. Helsingfors: Mercators Tryckeri, 1939.

This monograph, in harmony with others sponsored by the *Acta medica Scandinavica*, permits the author to discuss in some detail the metabolism of creatine on the basis of his own studies and those in the literature. The object of the investigations described was to study the origin and significance of creatinuria and determine whether creatine elimination could be utilized clinically for diagnostic or prognostic purposes. The studies deal largely with creatine metabolism in disturbances of the thyroid gland and in diseases of the muscles but also include studies of creatine-creatinine excretion in such conditions as pernicious anemia (and other blood diseases), uremia, hypertension, heart disease and fever. In thyrotoxicosis the creatinuria was found to be dependent on some action of thyroxine, but this was independent of the basal metabolism. Since creatinuria occurs in a wide variety of conditions, the author concludes that it is an unspecific phenomenon resulting from the general debilitation of the patient and is of clinical value only in judging the extent, severity and course of diseases specifically affecting the muscles. While the author's own studies appear to be well organized and carried to a logical but somewhat detailed conclusion, the discussion of the relatively enormous literature (1,455 references) reveals some inadequacies in the discussion of previous studies bearing on the problem in hand. The book will be found, however, to contain considerable material of interest to students of creatine-creatinine metabolism.

Report of the Chief of the Bureau of Home Economics, 1939. United States Department of Agriculture, Bureau of Home Economics. Paper. Price, 5 cents. Pp. 22. Washington, D. C.: Supt. of Doc., Government Printing Office, 1939.

This annual report of the Bureau of Home Economics for the fiscal year which ended June 30, 1939, is of interest because the Bureau of Home Economics, a division of the United States Department of Agriculture, conducts investigations that further the well-being of all persons in the United States through more effective use of foods and other agricultural products and works toward improving the living of farm families.

The scope of the Bureau's activities includes economic studies on the level of living a family can achieve on a limited income; foods and nutrition studies on the kinds and amounts of essential nutrients required to maintain and promote maximum health; collection of data on the composition of foods; studies of the influence of methods of production and processing on the quality of foods; textile and clothing studies on the chemical and physical properties of various textile fabrics, studies to determine the best quality of fibers and the best fabric construction for particular use, and the development of an improved basis for sizing children's garments and patterns; housing and equipment studies on the minimum space requirements for effective arrangement of needed equipment, work spaces and storage spaces.

Bulletins describing these studies were prepared and published during the year together with articles in outside journals. A list of the publications and articles is provided in this report.

Elements of Human Physiology. By Mirlam Scott Lucas, B.S., Ph.D. Cloth. Price, \$4.50. Pp. 400, with 158 illustrations. Philadelphia: Lea & Febiger, 1940.

This textbook was written for college courses and is based on actual teaching experience. While brief and concise, the scope of subject matter seems well balanced, well integrated and correlated. Some of the illustrations are original, some reproduced from standard sources. There are twenty tables. On the whole, the work seems somewhat superior to most recent college textbooks despite a certain degree of dogmatic presentation. This the author, in the preface, justifies on the ground that controversial subjects should not be stressed too much with the class of students for whom the book is designed. Probably such a view is justified. Certainly no one will be misinformed by any of the material presented.

Chronic Manganese Poisoning in an Ore-Crushing Mill. By Robert H. Flinn, Passed Assistant Surgeon, and others. From the Division of Industrial Hygiene, National Institute of Health. Prepared by direction of the Surgeon General. Federal Security Agency, U. S. Public Health Service. Public Health Bulletin No. 247. Paper. Price, 15 cents. Pp. 77, with illustrations. Washington, D. C.: Supt. of Doc., Government Printing Office, 1940.

Eleven cases of chronic manganese poisoning are reported in this engineering and medical survey of an ore-crushing mill. These observations point out the interesting neurologic manifestations of long-standing manganese intoxication, especially the similarity to such nervous disorders as multiple sclerosis. The distinguishing features are a history of exposure to sufficient concentrations of manganese dust over a long enough time, the appearance of muscular stiffness and incoordination progressing to marked alterations in speech and gait, relative and absolute diminution of neutrophils, lowered blood calcium, and a slight reduction in the middle zone of Lange's test. No cases of chronic poisoning were discovered in exposures of less than 30 mg. of manganese per cubic meter, but caution is expressed not to accept such a figure as a threshold limit. The necropsy in one case demonstrated that the lungs were the principal port of entry and major loci of stored manganese; the liver and kidneys were not found to be greatly changed. Postmortem changes prevented microscopic study of the brain and cord. This report indicates that manganese poisoning is entirely unnecessary and that modern equipment can control the exposure.

Biography of Dr. Joseph Strong 1770-1812, Philadelphia Physician. By Lockwood Barr. Paper. Pp. 43. Pelham Manor, N. Y.: The Author, 1940.

Joseph Strong was born in Connecticut in 1770, studied medicine, practiced in Philadelphia after the Revolutionary War and died in 1812. He is credited with having been the inventor of the tourniquet, and the members of his family who have published this biography are seeking earnestly a specimen of the type of tourniquet he invented so that they may present it to the Yale School of Medicine. In his early days he made some mechanical inventions anticipating the principle of the bicycle. He also obtained a patent on a carriage propeller. He studied medicine in the University of Pennsylvania; although he did not graduate, he attended a course of lectures by Benjamin Rush. Dr. Strong was a member of the group known as the Hartford Wits, whose poems were published in 1793 in an anthology. He was from 1793 onward surgeon in the army in charge of the army hospital 22 miles south of Pittsburgh. The record of his life is an intimate account of an interesting character.

Synopsis of Obstetrics. By Jennings C. Litzberg, M.D., F.A.C.S. Fabrikoid. Price, \$4.50. Pp. 394, with 157 illustrations. St. Louis: C. V. Mosby Company, 1940.

It is difficult to present the subject of obstetrics in outline form, particularly when the size of the book is limited. Nevertheless the author, who has been one of the leading teachers of obstetrics for more than a generation, has skillfully accomplished his purpose. He has arranged the important details of obstetrics in brief and succinct sentences. The treatment recommended by the author is conservative and in accordance with present day teachings. The book is well illustrated but nearly all the illustrations were borrowed from other books. This synopsis should prove helpful to medical students and to general practitioners who want to review various obstetric subjects with a minimum of time and effort.

Unconquered Enemy. By Boris Sokoloff, M.D., Sc.D. Cloth. Price, \$1.75. Pp. 198. New York: Greystone Press, 1940.

This is an extensive and detailed discussion of cancer research by a man who has been in close touch with research scientists all his life. The book is full of useful and interesting information for the cultured person of an inquiring turn of mind who likes his facts with a background of history and embroidered with descriptions of the scientists whose work is cited and of the laboratories in which they labored. The book is too technical for reading by persons of limited education. It contains too much speculative material of interest to the scientist and the seeker after information for its own sake to be of use to the practical individual who wants to know merely what science

has learned about cancer and how such knowledge must be applied definitely to his own situation. In the chapter about the curability of cancer there is much information which will do more to alarm the reader than reassure him, although the conclusions reached are in accord with the general attitude of scientific and clinical observers, namely that there is more hope on the cancer horizon than there has been in previous years. The general style of the book and the inclusion of bibliographic references, largely to the medical literature, are characteristic of the work of the scientist emerging briefly from the cloister of the laboratory to share his precious information with an ignorant public, but not being able to depart wholly from the scientific method of communication. For this reason, unfortunately, this excellent book may have too limited an audience.

Diagnostica differenziale delle emopatie. Di Edoardo Storil. Estratto da "Diagnostica medica differenziale," di Adolfo Ferrata. Paper. Pp. 357, with 79 illustrations. Milan: Cromotopia E. Sormani, 1939.

Here is a monograph on the blood dyscrasias. The first two chapters deal with the genesis and morphology of the various types of blood cells. Two excellent colored charts illustrate all three types of blood cellular elements. The third chapter deals with the anemias. This includes the symptoms, the signs and the hematologic classifications of the anemias. There are in this chapter several colored plates illustrating the various types of anemia, as well as the appearance of the bone marrow in pernicious anemia in a state of relapse. The chapters on the myeloses, the hemorrhagic diseases and the diseases of the lymph glands are complete and well illustrated in color as well as black and white. The chapter on splenomegaly is complete, as is the one on polycythemia. The last chapter illustrates a sternal puncture and a splenic puncture vividly and clearly, as well as a lymph gland puncture. The colored plates of all three of these conditions are excellent. This book is an excellent monograph on the diagnosis and differential diagnosis of the blood dyscrasias, with as fine colored plates of the peripheral blood cells, as well as bone marrow sections, as can be found in any of the textbooks or blood atlases.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Workmen's Compensation Act (Minnesota): Right of Injured Employee to Select Physician at Employer's Expense.—Carmody was injured in the course of his employment with the city of St. Paul. He obtained medical treatment from his family physician and refused to accept the services of any of the physicians designated by the city to treat him. The city paid him compensation during the period of his disability and such hospital expenses as were necessitated by his injuries but refused to pay his physician's bill of \$110. In subsequent proceedings instituted under the workmen's compensation act of Minnesota by Carmody the industrial commission upheld the city, and the workman brought certiorari to the Supreme Court of Minnesota.

The sole question to be determined, said the Supreme Court, is whether or not an injured workman who has been treated by a physician of his own choice can require his employer to pay for the reasonable value of the physician's services when the employer is willing and ready, to the knowledge of the workman, to furnish and pay for medical treatment by a physician of the employer's choice. To determine that question the court regarded it as essential to discuss the legislative history of pertinent provisions of the workmen's compensation act of Minnesota in the light of a prior court decision rendered thereunder. The act originally adopted in 1913 provided

such medical and surgical treatment . . . as may be reasonably required at the time of the injury and thereafter during the disability, but not exceeding ninety (90) days, to cure and relieve from the effects of the injury, the same to be provided by the employer and in case of his inability or refusal seasonably to do so, the employer to be liable for the reasonable expense incurred by or on behalf of the employee in providing

the same; provided, however, that the total liability . . . shall not exceed the sum of one hundred dollars. . . . (Laws, 1913, c. 467, section 18).

In 1921, after study by an interim committee, the section just quoted was amended so as to provide that such medical and surgical treatment

as may reasonably be required at the time of the injury, and during the disability for not exceeding ninety (90) days and not exceeding one hundred (\$100.00) dollars in value, to cure and relieve from the effects of the injury, shall be provided by the employer and in case of his inability or refusal seasonably to do so, the employer shall be liable for the reasonable expense incurred by or on behalf of the employee in providing the same. . . .

The Commission may upon the petition of an employee and a proper showing of cause therefor order a change of physicians and designate a physician suggested by the injured employee or by the Commission itself and in such case the expense thereof shall be borne by the employer [within the limitation just noted]. (Laws, 1921, c. 82, section 19.)

The interim committee in reporting to the Minnesota house of representatives on the bill, which on its enactment became the law just quoted, stated: "This provision [referring to the paragraph of quoted matter which authorized a change of physicians on the petition of an employee] is intended to overcome the objection to permitting the employer to select any physician and require the employee to accept him."

In *Lading v. City of Duluth*, 153 Minn. 464, 190 N. W. 981, a case involving facts similar to those in the instant case and decided while the workmen's compensation act as amended in 1921 was still in force, this court held that Lading, an injured employee of the city of Duluth, could not recover the reasonable value of the services rendered by a physician of his own choice because it had not been shown either that the employer was unable to furnish a physician or that he had refused to do so. However, in holding that the employer was liable to reimburse Lading to the extent of \$100, the statutory limit at that time, this court said:

But we are of opinion that the statute should not be construed to impose upon the employee the unqualified obligation to accept the physician selected by the employer, or forfeit the right of reimbursement there given. It often happens, a situation perhaps more or less general, that the employee has a family physician to whom he prefers to turn in case of injury or sickness, rather than to accept the services of another with whom he has no acquaintance, or in whom perchance he has no confidence. In that situation he should have the option or unquestioned right to choose his medical attendant, or accept the one tendered him by the employer, but within the limits of liability on the part of the employer imposed by the statute. The statute contains no language unconditionally requiring the latter to accept the physician tendered him or relinquish the right of reimbursement altogether, and we construe it to give him that option. . . .

Undoubtedly, continued the court, the construction adopted by us in the Lading case diametrically opposed the purpose of the lawmakers, as evidenced in the report of the interim committee, to vest in the employer in the first instance the right to designate the physician to treat a workman who had sustained an industrial injury. However, the court was of the opinion that the rule announced in the Lading decision should not now be altered in view of the fact that the legislature, which was aware of the holding in that case, had made no subsequent attempt to amend the pertinent provisions of the compensation act relating to choice of a physician. This legislative inaction, the court held, constituted acceptance by the legislature of the statutory construction laid down in the Lading case. In 1923 the legislature again amended the provisions in question without altering the respective fundamental rights and duties of employer and employee except that the financial limit on the employer's liability was removed and the employer was also given the right to apply for a change of physicians. Manifestly, said the court, the 1923 legislature, if it had not intended to adopt the construction placed on these provisions by the Lading decision, could have specifically provided, which it did not, that the employer could designate a physician whose services the employee must accept or forfeit any claim against the employer for services rendered by a physician of his own choice. Again in 1929 the legislature reenacted the provisions in question of the 1923 law except that the ninety day limit was eliminated. Consequently, despite repeated opportunities to alter the rule of the Lading case, the legislature has not done so. Inasmuch as the holding in the Lading decision had become a part of the compensation law, since it had, in effect, been adopted by the

legislature, the court was unwilling at this late stage to reexamine that decision to determine its soundness or unsoundness, and it believed that any change, if needed, should be made by the legislature.

The court accordingly concluded that the workman should have been awarded the amount claimed for medical services, which amount was stipulated to be reasonable. It therefore reversed the order of the commission denying the workman's claim and remanded the cause with directions to award the workman the money spent by him in employing his own physician.—*Carmody v. City of St. Paul (Minn.)* 291 N. W. 895.

Workmen's Compensation Act (Minnesota): Right of Injured Workman to Change Physicians at Expense of Employer.—Morrell, an employee of the city of Austin, Minn., on Jan. 26, 1935, in the course of his employment suffered "painful and lasting injuries" necessitating his submitting to a herniotomy and to a lumbosacral fusion operation on his spine. Immediately after the accident he was placed under the care of a physician selected by the city and its insurer. Eight months later he was examined by another physician, selected by his employer and its insurer, who reported that Morrell's condition was due to congenital abnormalities not caused by or associated with the industrial accident. Apparently medical attention was discontinued even though the workman continued to suffer and was confined to bed most of the time. In March 1936 Morrell wrote to the industrial commission of Minnesota and asked to be sent to the Mayo Clinic and for advice as to how that could be done free of expense to himself. He received a reply from an attorney for the commission advising him to obtain the authorization of his employer's insurer so as to avoid a dispute later on, since "the employer and insurer under compensation have the exclusive right to appoint the attending physician" if they are to be liable for expenses. The workman communicated with the insurer and was eventually instructed to go to Minneapolis to submit to an operation there by physicians designated by the insurer. He was told that if he went to the Mayo Clinic it would be at his own expense. Nevertheless, he went to that clinic and underwent a herniotomy in May 1936. In April 1937 another operation, described as a "difficult surgical matter, involving as it did a 'lumbosacral fusion' of the spine," was performed at the same clinic. Satisfactory recovery apparently resulted. The workman instituted proceedings under the workmen's compensation act of Minnesota to recover from the employer and its insurer the cost of the medical and hospital services incurred at the clinic. While the commission found that the services rendered at the clinic were given to cure and relieve conditions caused by the industrial injury, it denied the workman's claim because he had made "his own selection and failed to secure the permission of the employer or the insurer herein so to do or to secure from the industrial commission . . . an order for change of physicians." The workman then brought certiorari to the Supreme Court of Minnesota.

The right of the workman, said the Supreme Court, to be reimbursed by the employer and its insurer for the services rendered him at the clinic must be determined in the light of the provisions of the workmen's compensation act relating to the furnishing or supplying of medical care necessary "to cure and relieve from the effects" of an industrial injury. In this respect, 1 Mason Minn. St. 1927, section 4279, provides

[the employer] shall furnish such medical, surgical and hospital treatment, including nursing, medicines, medical and surgical supplies, crutches and apparatus, including artificial members, as may reasonably be required at the time of the injury, and during the disability . . . to cure and relieve from the effects of the injury, provided that in case of his inability or refusal seasonably to do so, the employer shall be liable for the reasonable expense incurred by or on behalf of the employee in providing the same. . . .

The Commission may at any time upon the request of an employee or employer order a change of physicians and designate a physician suggested by the injured employee or by the Commission itself and in such case the expense thereof shall be borne by the employer . . .

In the opinion of the court, inasmuch as Morrell's employer and its insurer and the physicians selected by them had, for a period of more than sixteen months, fumbled and delayed the discovery and treatment of Morrell's real condition, the conduct of the employer and its insurer constituted, within the meaning of the statute, "inability or refusal seasonably" to furnish necessary

treatment. The section in question, continued the court, authorizes the commission to "order a change of physicians" at any time, but in selecting another physician it must designate either one "suggested by the injured employee" or one of its own choice. While either employer or employee may "request" a change of physicians, only the employee or the commission may "designate" such physician. In the instant case the commission did not "refuse" the workman's request for a change of physicians. However, it erroneously advised the workman to obtain the consent of his employer and its insurer because they had "the exclusive right to appoint the attending physician." In other words, the commission washed its hands of the whole affair and never exercised its granted authority. Its inaction permitted the employer and its insurer to be adamant in erroneously claiming that if the workman did not accept their chosen physicians they would be "compelled to decline to assume any responsibility whatsoever for any expense incurred."

The workman, continued the court, was an ordinary working man wholly uninformed as to procedural requirements and was without aid of counsel. He was left completely ignorant as to the true legal course to pursue to get needed professional aid. He indicated his choice of medical service in language that no one could misunderstand. His own rehabilitation was uppermost in his mind. The wisdom of that choice is apparent from the results obtained. In view of the reasoning adopted by this court in *Carmody v. City of St. Paul*, 207 Minn. 419, 291 N. W. 895 (abstracted on the preceding page), it is clear that the workman is entitled to reimbursement for the medical and hospital expenses incurred and paid by him. However, said the court, if the employer and the insurer had correctly informed the workman of his rights and if he had then ignored them, a different result might now be compelled.

The Supreme Court accordingly reversed the order of the commission denying the workman's claim and instructed the commission to allow the workman reimbursement from the employer and its insurer for the amount of the charges made by the clinic. —*Morrell v. City of Austin et al. (Minn.)*, 293 N. W. 144.

Contraceptives: Unlawful in Connecticut for Physician to Prescribe or Advise Use of Contraceptive Drugs or Devices.—Two physicians, Nelson and Goodrich, prescribed and advised the use of a certain spermaticidal drug and a certain contraceptive device by a married woman who sought their advice. The purpose of advising the use of such drug and device admittedly was to prevent conception, and the patient actually used them for that purpose. Subsequently the two physicians and the trained nurse who carried out their prescription, Clara McTernan, were prosecuted by the state in three separate actions for violation of the statutory law of Connecticut, which provides that any person who shall use any drug, medicinal article or instrument for the purpose of preventing conception, or who shall assist, abet, counsel or cause another to commit such an offense shall be fined or imprisoned or both (General Statutes of Connecticut, 1930, sections 6246 and 6562). The defendants claimed that, since their advice and conduct was necessary to preserve the "general health" of their patient, they had done no wrong. From judgments of the trial court sustaining the defendants' demurrers and holding the defendants not guilty, the state appealed to the Supreme Court of Errors of Connecticut.

The Supreme Court of Errors could not agree with the defendants' contention that either the statutory law in question should be construed so as to include an exception protecting the right of a physician to prescribe contraceptive measures when in his opinion such steps are necessary to preserve the "general health" of his patient or else the statute was unconstitutional. In the judgment of the court the wording of the statute was clear and unambiguous and contained no provision excepting a physician from its terms. Furthermore, no legislative intent to exempt physicians could be implied because at each session from 1923 to 1935 the legislature had rejected bills proposing to amend the statute in question so as to exempt the use of contraceptive drugs and devices on the prescription of a physician and to exempt the sale of such drugs and devices to physicians on their prescriptions. The defendants' contention, that the statute in question was unconstitutional because without due process of

law, it deprived the people of their natural right to decide whether or not they should have children and to use contraceptives if they decided not to have them, likewise did not meet with the court's approval. Under its police power a state may legislate to preserve and protect the public morals and to aid what is sanctioned by usage or held by the prevailing morality to be necessary to the public welfare. It must be assumed, said the court, that at the time the statute was originally enacted the legislature was aware of opposing views concerning contraceptives and that it deliberately chose between them. This is especially true since the legislature has repeatedly refused to modify the statute by amendment. The court believed that it was not for it to say that the legislature might not reasonably hold that artificial limitation of even legitimate child-bearing would be inimical to the public welfare and that the use of contraceptives would be injurious to public morals. In fact, the legislature was not precluded from considering that not all married people are immune from temptation or inclination to extramarital indulgence and that the risk of illegitimate pregnancy is a recognized deterrent deemed desirable in the interests of morality. The court concluded, therefore, that the statute was constitutional. It added, however, that if the statute was unwise or unreasonably comprehensive, the appeal should be to the legislature and not to the court.

Accordingly, the judgments of not guilty were reversed and the causes remanded with instructions that the defendants' demurrers be overruled.—*State v. Nelson; State v. Goodrich; State v. McTernan (Conn.)*, 11 A. (2d) 856.

Society Proceedings

COMING MEETINGS

- American Academy of Ophthalmology and Oto-Laryngology, Cleveland, Oct. 6-11. Dr. William P. Wherry, 107 South 17th St., Omaha, Secretary.
- American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Excelsior Springs, Mo., Sept. 26-28. Dr. James R. Bloss, 418 Eleventh St., Huntington, W. Va., Secretary.
- American Association of Railway Surgeons, Chicago, Sept. 16-18. Dr. Daniel B. Moss, 547 West Jackson Blvd., Chicago, Secretary.
- American Clinical and Climatological Association, White Sulphur Springs, W. Va., Oct. 28-30. Dr. Francis M. Rackemann, 263 Beacon St., Boston, Secretary.
- American College of Surgeons, Chicago, Oct. 21-25. Dr. Frederic A. Besley, 40 East Erie St., Chicago, Secretary.
- American Hospital Association, Boston, Sept. 16-20. Dr. Bert W. Caldwell, 18 East Division St., Chicago, Executive Secretary.
- American Public Health Association, Detroit, Oct. 8-11. Dr. Reginald M. Atwater, 50 West 50th St., New York, Executive Secretary.
- American Roentgen Ray Society, Boston, Oct. 1-4. Dr. Carleton B. Peirce, Royal Victoria Hospital, Montreal, Canada, Secretary.
- American Society of Anesthetists, New York, Oct. 10. Dr. Paul M. Wood, 745 Fifth Avenue, New York, Secretary.
- Association of Military Surgeons of the United States, Cleveland, Oct. 10-12. Dr. H. L. Gilchrist, Army Medical Museum, Washington, D. C., Secretary.
- Central Society for Clinical Research, Chicago, Nov. 1-2. Dr. Carl V. Moore, Washington University School of Medicine, St. Louis, Secretary.
- Clinical Orthopaedic Society, Milwaukee and Madison, Wis., Oct. 18-19. Dr. Myron O. Henry, 825 Nicollet Ave., Minneapolis, Secretary.
- District of Columbia, Medical Society of the, Washington, Oct. 15-17. Mr. Theodore Wiprud, 1718 M St., N.W., Washington, Secretary.
- Indiana State Medical Association, French Lick, Oct. 29-31. Mr. Thomas A. Hendricks, 23 East Ohio St., Indianapolis, Executive Secretary.
- Inter-State Postgraduate Medical Association of North America, Cleveland, Oct. 14-18. Dr. W. B. Peck, 27 East Stephenson St., Freeport, Ill., Managing Director.
- Kentucky State Medical Association, Lexington, Sept. 16-19. Dr. A. T. McCormack, 620 South Third St., Louisville, Secretary.
- Michigan State Medical Society, Detroit, Sept. 24-27. Dr. L. Fernald Foster, 2020 Olds Tower, Lansing, Secretary.
- Mississippi Valley Medical Society, Rock Island, Ill., Sept. 25-27. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.
- Nevada State Medical Association, Las Vegas, Oct. 11-12. Dr. Horace J. Brown, 120 North Virginia St., Reno, Secretary.
- Omaha Mid-West Clinical Society, Omaha, Oct. 28-Nov. 1. Dr. J. D. McCarthy, 107 South 17th St., Omaha, Secretary.
- Pacific Association of Railway Surgeons, Reno, Nev., Sept. 20-21. Dr. W. T. Cummins, 1400 Fell St., San Francisco, Secretary.
- Pacific Coast Society of Obstetrics and Gynecology, San Francisco, Nov. 6-9. Dr. T. Floyd Bell, 409 Twenty-Ninth St., Oakland, Calif., Secretary.
- Pennsylvania, Medical Society of the State of, Philadelphia, Sept. 30-Oct. 3. Dr. Walter F. Donaldson, 500 Penn Ave., Pittsburgh, Secretary.
- Southern Minnesota Medical Association, Red Wing, Sept. 23. Dr. Harold C. Habein, 102 Second Ave., Rochester, Secretary.
- Vermont State Medical Society, Rutland, Oct. 9-10. Dr. B. F. Cook, 154 Bellevue Ave., Rutland, Secretary.
- Wisconsin, State Medical Society of, Milwaukee, Sept. 18-20. Mr. J. G. Crownhart, 110 East Main St., Madison, Secretary.

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American J. Obstetrics and Gynecology, St. Louis 40:1-180 (July) 1940. Partial Index

- Nutrition Study in Pregnancy: Correlation between Dietary Survey of Vitamin A Content and Dark Adaptation Time. P. F. Williams, B. Hark and Florence G. Fralin, Philadelphia.—p. 1.
- *Pregnancy Pylonephritis in Relation to Renal Damage and Hypertension: Clinical Study of Forty-Five Cases of Pylonephritis More Than Five to Ten Years After Infection. E. G. Crabtree and D. E. Reid, Boston.—p. 17.
- *Erythroblastosis Foetalis: Report of Twenty-Seven Cases. S. A. Wolfe and I. Neigus, Brooklyn.—p. 31.
- Relationship of Thyroid and Adrenal Glands to Toxemias of Pregnancy. E. C. Hughes, Syracuse, N. Y.—p. 48.
- Treatment of Oliguria and Anuria. W. J. Dieckmann and S. Kramer, Chicago.—p. 61.
- Endometrium-like Mucosa Lining the Fallopian Tube: Its Origin, Differential Characteristics and Clinical Significance. A. A. Marchetti, New York.—p. 69.
- Prolapse of Umbilical Cord: Analysis of Fifty-Eight Cases. W. F. Mengert and F. H. Longwell, Iowa City.—p. 79.
- Epidemic Infectious Diarrhea of Newborn Infant. R. S. Cron, H. W. Shutter and A. H. Lahmann, Milwaukee.—p. 88.
- Effect of Thyroid on Sterility in Normal and Hypothyroid Females. L. B. Winkelstein, New York.—p. 94.
- Study of 1,200 Cases of Hysterectomy. P. H. Smith, Evanston, Ill.—p. 118.
- Uterine Bleeding in Last Trimester of Pregnancy: Its Diagnostic Significance and Treatment. J. T. Wallace, New York.—p. 128.
- Suppression of Lactation by Stilbestrol. C. W. Mucklé, Philadelphia.—p. 133.
- Stilbestrol in Treatment of Menopausal Symptoms. F. L. Payne and C. W. Mucklé, Philadelphia.—p. 135.
- Use of Helium and Oxygen in Treatment of Asphyxia Neonatorum: Preliminary Communication. H. F. Kane, Washington, D. C.—p. 140.
- Renal Insufficiency Following Transfusion of Compatible Blood. H. H. Brainard, New York.—p. 142.
- Film Scales for Use in Pelvimetric Roentgenography. J. B. Jacobs, Washington, D. C.—p. 150.
- Successive, Coexistent Tubal Pregnancies. C. A. Behney and W. J. Hanes, Philadelphia.—p. 155.
- Removal of Gräfenburg Ring Without Interruption of Pregnancy. R. A. Kimbrough Jr. and P. Tompkins, Philadelphia.—p. 156.

Pregnancy Pylonephritis, Renal Damage and Hypertension.—Crabtree and Reid point out that in infections of the urinary tract in pregnancy and in the puerperium there is little evidence in most cases of renal insufficiency and, where such insufficiency has been demonstrated, there is prompt return to normal function. These apparent facts tended to strengthen the view that pylonephritis is a transitory disorder. Obstetric and urologic practice have been dominated by this point of view to such an extent that preservation of the fetus, even in severe cases of pylonephritis of pregnancy, has been made paramount unless immediate danger to the mother was indicated. The newer concept of the severity of the remote effects of pregnancy pylonephritis now threatens a reversal of policy. Some writers are prepared to advocate interruption of pregnancy on evidence which obstetricians consider inadequate. The authors think that, until some of these questions have been answered through clinical study of apparently healthy women who have had the disease, a radical policy of interruption of pregnancy for pylonephritis is no more logical than a policy which preserves the pregnancy at any cost to the mother short of death. In a survey of forty-five patients with pylonephritis of pregnancy the authors produce evidence by intravenous pyelography, intravenous phenolsulfonphthalein excretion, concentration of the urine test and tests for nitrogen retention to indicate that a high percentage of patients suffer appreciable damage to their kidneys which is demonstrable at from five to ten years after the infection. For the majority adequate renal function is present at that time. The prognosis is grave for the patient who has had both

toxicemic and pylonephritic injury. All three patients who had had both toxemia and pylonephritis had hypertension. Two of the three were dead five years after the injury. Six patients with pylonephritis showed blood pressure readings above 150/90, associated with some evidence of renal deficiency at that stage of the disease. Renal damage consisted of injury both to the conduction channels, pelvis and ureter and to the cortex. When there is injury to the conducting channels, urinary stasis may further injure the cortex, especially when infection is still present. Five of the forty-five patients studied had stone. Evidence of total renal deficiency was present at the time of examination in some proved unilateral cases. This suggested some other injury than bacterial invasion for the second kidney. The authors gained the impression that pylonephritis of pregnancy should be looked on as a progressive disease in many cases. Data have not yet been produced to indicate to what extent it shortens life. Some of the cases which were subnormal may have shown only the original damage and may now be in a stationary state. Sufficient evidence has been produced to indicate that the aim in treatment in pylonephritis associated with pregnancy should be to minimize the initial injury and clear the infection as soon as possible.

Erythroblastosis Foetalis.—According to Wolfe and Neigus, erythroblastosis foetalis is a disease of the blood-forming organs of the newborn infant, which results in an anemia characterized by the presence of an excessive number of immature red blood cells in the circulation. Hydrops foetalis, icterus gravis neonatorum and anemia haemolytica neonatorum are the three clinical types of erythroblastosis. Overlapping features are not infrequent. Five infants in the icteric group presented circumscribed edema. Icterus was the first symptom in the three infants of the anemia group. Erythroblastosis foetalis is not rare. Twenty-seven cases were encountered in 15,334 deliveries, an incidence of one in every 568 confinements. There were four cases of hydrops foetalis, twenty cases of icterus gravis and three instances of anemia haemolytica. Persisting hematopoiesis in the liver and spleen is the dominant pathologic aspect. The bone marrow is hyperplastic. Extramedullary hematopoiesis is often encountered in the pancreas, kidneys and adrenal glands. The hemoglobin and red cells are reduced but the color index is above standard. The total number of nucleated cells is increased with an abnormally high ratio of early red blood cells (normoblasts and erythroblasts). A tendency for recurrence in successive pregnancies is noteworthy. Four such cases are reported among nineteen mothers of the icteric group. Recurrent stillbirths were observed in 75 per cent of mothers with hydropic children and in 21 per cent of mothers who had delivered icteric progeny. Toxemia of pregnancy is above the normal incidence but of only moderate severity; it was noted in 50 per cent of the hydrops group in 20 per cent of the mothers in the icteric group. Premature labor is frequent; it was encountered in all the hydrops cases and in 30 per cent of the icteric series. In hydrops foetalis the distended abdomen may cause dystocia. This was observed in two of four infants in the series. Hydrops foetalis is the fatal type of erythroblastosis. All four infants in this group perished. Intrapartum diagnosis of hydrops foetalis is possible by x-ray examination. It should be regularly employed when a history of recurrent stillbirths or definite erythroblastosis is obtained. Icterus gravis is a severe form of erythroblastosis; fifteen of twenty infants succumbed. Jaundice is the most prominent symptom but may not appear for from twenty-four to forty-eight hours after birth. There is enlargement of the liver and spleen. Cerebral hemorrhage is frequent and often precludes recovery. Anemia haemolytica neonatorum is the mildest form of erythroblastosis; all three infants recovered. Pallor of the skin and mucous membranes may be preceded by mild icterus. Enlargement of the liver and spleen, or both, and an increased number of normoblasts in the smear afford prompt diagnosis. Early and repeated transfusions comprise the ideal method of therapy for icterus gravis. The five infants who recovered received such prompt treatment. Iron and liver extract are valuable adjuncts to transfusion in the anemia group. A history of repeated stillbirths indicates careful search for erythroblastosis as the underlying cause.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill. 44:1-160 (July) 1940

- Pneumo-Encephalographic Appearance of Hemangioblastoma of Cerebellum. C. G. Dyke and L. M. Davidoff, New York.—p. 1.
- Discussion of Roentgen Pelvimetry and Description of a Roentgen Pelvimeter. H. Thoms, New Haven, Conn.—p. 9.
- Polyostotic Fibrous Dysplasia: Report of Case with Unilateral Involvement. R. C. Moehlig and F. Schreiber, Detroit.—p. 17.
- Practical Applications of Body Section Roentgenography. S. Moore, St. Louis.—p. 24.
- Bone Changes in Leukemia. K. Mendl and O. Saxl, Brno, Czechoslovakia.—p. 31.
- Roentgenologic Study of Hip Joint of Infant in First Twelve Months of Life, with Reference to Early Diagnosis of Its Congenital Dislocation. M. S. Burman, New York, and H. C. Clark, New Rochelle, N. Y.—p. 37.
- Diagnostic Errors in Ulcerative Lesions of Stomach and Duodenum. E. Freedman and H. D. Goehring, Cleveland.—p. 48.
- Roentgenologic Study of Gastric Tuberculosis. A. J. Ackermann, Oklahoma City.—p. 59.
- Intestinal Obstruction at Terminal Ileum Caused by Large Irregular Gallstone: Report of Case. J. M. Flynn, Rochester, N. Y.—p. 69.
- *Respiration Pyelography: Study of Renal Motion in Health and Disease. R. D. Bacon, Erie, Pa.—p. 71.
- Experiences in Treatment of Primary Skeletal Sarcoma by Irradiation. A. Brunschwig and D. Tschetter, Chicago.—p. 83.
- Observations on Circulatory Changes in Bone. F. A. Chandler, Chicago.—p. 90.
- *Preoperative Irradiation of Breast. W. E. Howes and H. Bolker, Brooklyn.—p. 98.
- Regression of Carcinoma of Breast Following Artificial Menopause: Case Report. V. W. Archer and G. Cooper Jr., University, Va.—p. 108.
- Etiologic Factors in Some Forms of Cancer. D. T. Quigley, Omaha.—p. 110.
- Parathyroidism: Follow-Up Notes. H. W. Jacox, J. M. King and F. R. Bailey, Pittsburgh.—p. 113.
- Combined Action of Roentgen Rays and Sulfanilamide on Staphylococcus Aureus. R. Flocks, O. N. Fellowes and H. D. Kerr, Iowa City.—p. 115.
- Design of 4 Gm. Radium Bomb. A. H. Warner and R. H. Neil, Los Angeles.—p. 117.

Respiration Pyelography.—Bacon employed respiration pyelography in more than 200 cases during the past three years. Respiration pyelography, in his opinion, does not replace routine pyelography but is a valuable supplement. Respiration pyelography in the supine position is indicated when a knowledge of restricted renal or ureteral mobility will be of value. The author prefers it to postural study in these cases because of the ease and accuracy with which it can be carried out. Where the problem is one of excessive mobility and ureteral obstruction, the behavior of the upper urinary tract must be investigated in the supine and in the erect postures. The essential inspiration exposure may be supplemented by a diphasic film, from which may be obtained information regarding relationship of the several parts in the two phases of respiration. The author recommends respiration pyelography as a simple supplementary roentgenographic procedure capable of producing accurately a permanent record of the phenomenon of renal motion. Single film respiration pyelography is a simple procedure which can be utilized wherever pyelography is done. Renal mobility can be estimated in 90 per cent of cases studied in this manner. A movable diaphragm is a sine qua non for normal renal mobility, since the perirenal fascia is a direct extension from the diaphragm. Renal and ureteral anomalies are more adequately demonstrated by means of respiration pyelography than by simple pyelography. The estimation of renal mobility in case of calculus, pyonephrosis and parenchymal and cortical renal lesions gives information which is obtainable in no other manner. Respiration pyelography is a valuable diagnostic procedure in perinephric abscess; renal fixation indicates perirenal involvement. The development and use of respiration pyelography have stimulated a sharper interest in the behavior of the diaphragm and adjacent structures in health and disease.

Preoperative Irradiation of Breast.—Howes and Bolker submitted a series of advanced lesions of the breast to intensive preoperative roentgen therapy. Proof of the malignant character of the lesion should first be obtained, either by means of a small surgical incision or needle biopsy if large doses are to be given, such as would produce violent skin reactions or pleural pneumonia. The entire breast is crossfired with parallel x-ray beams; one portal is directed through the breast from its medial margin, the other approaches the breast laterally and from behind. The path of the ray is directed so that the beam emerges through the opposite side of the breast and is not

directed down into the lung bed. An additional portal to the breast from below may be included. The size of the portal varies from 8 by 10 cm. to 10 by 15 cm. and includes the whole glandular element of the breast. Two hundred roentgens is delivered to each of these two portals for from five to six days a week. The total skin dose is limited not to exceed 6,000 roentgens. The other factors used are 40 to 50 cm. skin-target distance, 200 kilovolts, filtration 2 mm. of copper and 1 mm. of aluminum, half-value layer 1.90 mm. of copper, approximately 20 roentgens per minute. The supraclavicular area is next crossfired through an anterior and posterior portal, usually 8 by 10 cm. in diameter. The axillary portals measure 8 by 10 cm. or 10 by 12 cm. and may be used last, as the cutaneous reaction in both the breast and the supraclavicular areas is by this time distinctly visible and thus the danger of overlapping or allowing a ribbon-like band of unirradiated tissue to remain is minimized. Such a series requires from seven to twelve weeks to complete and the cutaneous reaction in the axilla and other parts is at its height ten days after the last dose. All of the reaction and reepithelization is completed from six weeks to two months following the treatments. After a two to three months interval, radical mastectomy follows. The tumor will often shrink to a small percentage of its original size and metastatic glands in the axilla have been similarly influenced. On the other hand, the authors have had several failures in reducing the size of the original growth and in two instances the mass increased in size during or immediately following radiation therapy. The reduction in size of the tumor often produces an excellent psychologic reaction. Three patients, however, refused operation following this initial response to irradiation. One has since died of liver metastases. Comparison with preirradiation biopsy permitted observation on the microscopic changes caused by irradiation. The final determination of the efficacy of this procedure is derived from a three to five year end-result. As the time interval in this series has been too short and the series of cases limited in number, no tabulation as to the end-results has as yet been prepared.

Archives of Neurology and Psychiatry, Chicago

44:243-482 (Aug.) 1940

- Primary Cortical Centers for Movements of Upper and Lower Limbs in Man: Observations Based on Electrical Stimulation. J. E. Scarff, New York.—p. 243.
- Relation of Intracranial Tumors and Symptomatic Epilepsy. W. Penfield, T. C. Erickson and I. Tarlov, Montreal.—p. 300.
- *Relation of Experimental Histamine Headache to Migraine and Non-migraine Headache. T. J. C. von Storch, Boston.—p. 316.
- Inhibitory Functions of the Corpus Striatum. G. L. Freeman and L. Krasno, Chicago.—p. 323.
- Electro-Encephalographic Studies of Injury to Head. H. H. Jasper, J. Kershman and A. Elvidge, Montreal.—p. 328.
- Superstitious Self Protection in Psychopathology. G. C. Caner, Boston.—p. 351.
- Prevention of Dislocations and Fractures in Metrazol Convulsions. J. H. Rankin, Woodville, Pa.—p. 362.
- Relation of Age to Motor Impairment in Man and in Subhuman Primates. Margaret A. Kennard, New Haven, Conn.—p. 377.
- Syndrome of Finger Agnosia, Disorientation for Right and Left, Agraphia and Acalculia: Local Diagnostic Value. J. Gerstmann, New York.—p. 398.

Relation of Histamine Headache to Migraine and Other Headaches.—According to von Storch, evidence has recently been presented which suggests that the mechanism of migraine headache is similar to that of the so-called histamine headache. It was his purpose in this study to investigate other aspects of the relation. A total of 125 experiments was performed on thirty-six patients subject to migraine headache, on twenty-three patients subject to chronic, recurrent nonmigraine headache and on fifteen persons free of headache. The experiments were of three different types. In type A a sudden intravenous injection was given of approximately 0.0034 mg. of histamine per pound (0.00755 mg. per kilogram) of body weight. This dose was regulated according to a tabulation of subthreshold doses; for example, 0.04 mg. was given to patients weighing between 115 and 145 pounds (52 and 66 Kg.). In type B 0.05 mg. of histamine phosphate was injected intravenously, irrespective of the subject's weight. Type C experiments consisted in first giving the proper subthreshold dose, according to tabulation. If this failed to produce headache, the procedure was repeated at three minute intervals, with an increase of 0.01 mg. each time until headache occurred. It was found that

headache may be produced by sudden intravenous injection of minute amounts of histamine phosphate in from 30 to 40 per cent of patients subject to chronic recurrent headache. The same procedure fails to cause headache in those who are free from this complaint. Apparently the threshold for histamine headache is lower among persons subject to chronic recurrent headache than among those not so afflicted. The threshold for histamine headache is somewhat lower for patients subject to migraine headache than for those subject to nonmigraine headache. Among patients subject to migraine attacks the type of headache produced by histamine is frequently similar to migraine headache. Among patients subject to other types of recurrent headache the type produced by histamine is only occasionally similar to the habitual headache. There was no evidence that the cranial vascular tree of patients subject to hemicranial migraine headache is unilaterally hypersensitive to histamine. These observations imply that in migraine and histamine headaches the mechanism productive of pain is somewhat similar.

Archives of Pathology, Chicago

30:465-650 (Aug.) 1940

- Acute Ischemic Necrosis of Kidney: Clinicopathologic and Experimental Study. A. Penner and Alice Ida Bernheim, New York.—p. 465.
Histology of Experimental Appendiceal Obstruction (Rabbit, Ape and Man). R. E. Buirge, C. Dennis, R. L. Varco and O. H. Wangenstein, Minneapolis.—p. 481.
Tissue Culture as Diagnostic Aid in Identification of Atypical Tumors. M. E. Sano and L. W. Smith, Philadelphia.—p. 504.
Relationship of Body Weight to Cancer Incidence. A. Tannenbaum, Chicago.—p. 509.
Squamous Cell Carcinoma of Eustachian Tube. H. L. Stewart, Bethesda, Md., and M. M. Lieber, Philadelphia.—p. 518.
Chemical Analysis of Liver in Case of Essential Xanthomatosis. H. Wood and H. Reinstein, Boston.—p. 533.
Occurrence and Significance of Congenital Malignant Neoplasms. H. G. Wells, Chicago.—p. 535.

Body Weight and Cancer.—Tannenbaum bases the possibility of a correlation between overweight and cancer mortality on laboratory observations of mice and on statistical data of a number of insurance companies. Experimentation with mice of various strains indicated a lower incidence of tumors and a greater longevity in mice which had been fed rations inferior in quantity by from one half to one third to those of full fed specimens. Analysis of the insurance statistics examined showed, with one exception, that overnutrition and overweight were significant factors in the histories of cancerous persons. Though the results of animal experimentation and of insurance observations strongly suggest a connection between body weight and cancer incidence, the author calls attention to the fact that body weight is the result of complex factors and that, in consequence, not necessarily direct and primary relationship may exist between cancer mortality and body weight. In fact, the factors controlling body weight may be directly more significant than body weight itself. Furthermore, cancer is not a single entity but a group of conditions. Correlation between body weight and carcinoma may therefore exist for some kinds of tumors and not for others. The establishment and maintenance of body weight levels at a minimum compatible with general good health, possibly from 10 to 20 pounds below accepted "normal" levels, may have prophylactic value or at least delay the appearance of the tumor. Further clarification of the relation between cancer and body weight, the author believes, may come from the laboratory where animal material can be controlled and the difficulties inherent in studies on man be eliminated.

Archives of Physical Therapy, Chicago

21:385-448 (July) 1940

- Response and Increase in Skin Temperature as Indicators of Efficiency of Vasodilating Drugs by Iontophoresis. D. H. Kling, Los Angeles.—p. 389.
Surgical High Frequency Currents in Cancer of Rectum. T. de Cholnoky, New York.—p. 392.
Practical Implications of Strength-Duration Curves in Early Paralysis. F. B. Moor, Los Angeles; C. W. Dail and K. Kellogg, Loma Linda, Calif.—p. 396.
Role of Physical Therapy in Fractures. M. E. Knapp, Minneapolis.—p. 401.
Short Wave Diathermy in Nasal Sinus Disease. F. L. Wahrer, Marshalltown, Iowa.—p. 410.
Present Status of the Hearing Aid Problem. H. A. Carter, Chicago.—p. 414.
Detachment of Retina: Evolution of Its Modern Management. A. Posner, New York.—p. 420.

Delaware State Medical Journal, Wilmington

12:155-170 (July) 1940

- Use of Heparin in Treating Case of Subacute Bacterial Endocarditis with Patent Ductus Arteriosus. E. R. Miller, Wilmington.—p. 155.
Bronchiectasis: Its Clinical Aspect. L. B. Flinn, Wilmington.—p. 159.
Diagnosis of Bronchiectasis, Bronchoscopy and Bronchography. W. M. Pierson, Wilmington.—p. 161.

Florida Medical Association Journal, Jacksonville

27:3-54 (July) 1940

- Early Recognition of Bleeding Lesions of Gastrointestinal Tract. B. R. Kirklin, Rochester, Minn.—p. 13.
Experimental Atabrine Therapy in Granuloma Inguinale. A. Brown, Jacksonville.—p. 15.
Pyelonephritis: Recent Improvements in Treatment. J. J. Nugent, Miami.—p. 18.
A Young Doctor Looks at Socialized Medicine. R. C. Cumming, Ocala.—p. 23.
Syphilis: A Few General Considerations. W. E. Murphree, Gainesville.—p. 25.
Low Back Pain. J. M. Hoffman, Pensacola.—p. 30.
Traumatic Surgery in a Small Hospital. G. M. Zeagler, Palatka.—p. 31.

Iowa State Medical Society Journal, Des Moines

30:381-424 (Aug.) 1940

- Deficiency States and Their Treatment. A. M. Snell, Rochester, Minn.—p. 381.
Common Basis of Psychotherapy and General Therapy. A. H. Woods, Iowa City.—p. 384.
Weed Dermatitis. T. L. Trunnell, Iowa City.—p. 390.
Vitamins in Ophthalmology. B. F. Kilgore, Des Moines.—p. 394.
Complications in Middle Ear Diseases Following Sulfanilamide Therapy. F. H. Reuling, Waterloo.—p. 400.
Intra-Abdominal or Peritoneal Adhesions. E. M. Kersten, Fort Dodge.—p. 403.
Symptoms and Diagnosis of Joint Diseases. K. R. Werndorff, Council Bluffs.—p. 407.
Carcinoma of Stomach Associated with Pernicious Anemia. A. B. Nesler, Dubuque.—p. 410.

Journal of Allergy, St. Louis

11:439-536 (July) 1940

- Experimental and Clinical Study of Fresh and Modified Pollen Extracts. A. Stull, R. A. Cooke, W. B. Sherman, S. Hebbald and S. F. Hampton, New York.—p. 439.
Experimental Alimentary Allergy and Its Prevention. J. Bronfenbrenner, D. M. Hetler, Frances M. Love and J. M. Burnett, St. Louis.—p. 466.
Studies in Food Allergy: I. Antigenic Relationship of Shellfish. L. Tuft and G. I. Blumstein, with technical assistance of S. Usher, Philadelphia.—p. 475.
Studies on Extracts Made from Pollens Ground in a Ball Mill. P. H. Langner Jr. and R. A. Kern, Philadelphia.—p. 488.
Effect of Pollen Contact on Age of Onset of Hay Fever. J. A. Clarke Jr. and H. C. Leopold, Philadelphia.—p. 494.
Oral versus Parenteral Pollen Therapy: Clinical Study. B. B. Alperstein, Brooklyn.—p. 498.

Oral versus Parenteral Pollen Therapy.—Alperstein evaluated the therapeutic effect of the oral method of pollen therapy as compared with the parenteral. Fifty patients sensitive to ragweed were placed on the oral pollen therapy. They reported twice a week preseasonally and were given each time a capsule of dried ragweed pollen. The first dose consisted of 500 noon pollen units and doses were gradually increased until a total of 90,000 noon units per dose had been reached. The dose was then reduced to 60,000 noon units. The fifty patients taking oral therapy could be divided into two groups. The first group of twenty-six had not taken treatment for hay fever in previous seasons. These twenty-six reported that they had had (before 1938) from moderate to severe symptoms. During this season (the fall of 1938) on oral pollen therapy, twelve of twenty-six, or 46 per cent, obtained above average relief, whereas eight of twenty-six, or 31 per cent, received no relief. A second group consisting of twenty-four patients had been treated parenterally in prior seasons. These patients obtained better results in 1938 on oral therapy than before 1938 on the parenteral method. In this second group the results were better than in the first group. Here only four failed to get relief, while in the first group there were eight. A conclusion may be made that an added impetus toward improvement in the second group was due to the cumulative effect of parenteral treatment in previous seasons. The failures in both groups had multiple sensitivities (to foods and other inhalants). This may account for the few

poor results. Neither the site of allergic manifestations nor the degree of sensitivity bore any relation to clinical relief of symptoms under any mode of treatment. Unpredictable reactions occurred with the oral method. The range of dosage (by the oral method) within which reactions occurred was quite wide, anywhere from 1,000 to 90,000 noon units. The reactions were of three types, gastrointestinal, respiratory and systemic. The parenteral method gave a greater percentage of satisfactory relief as well as a smaller percentage of complete failures than did the oral method. In view of the unpredictable reactions, a rigid schedule for oral pollen therapy cannot be planned for self administration by patients. It is inadvisable to allow patients to treat themselves by the oral method. The experiments with the blood and urine of patients treated orally show that (a) an appreciable amount of pollen is absorbed through the gastrointestinal tract and (b) reagin and allergen coexist in the circulating blood at the same time at the height of treatment. The oral method is not recommended, as it has no particular advantage over the parenteral method; nor do the results obtained show nearly as much beneficial clinical relief as those obtained by the parenteral method.

Kentucky Medical Journal, Bowling Green

38:325-362 (Aug.) 1940

- Treatment of Thrombophlebitis. W. Barrow, Lexington.—p. 326.
Surgery of Breast: Anatomic and Physiologic Considerations. L. E. Hurt, Lexington.—p. 330.
Cervix Uteri and Its Relation to Childbirth. W. T. McConnell, Louisville.—p. 333.
Treatment of Gonorrhea in the Male. D. E. Scott, Lexington.—p. 336.
Anemia as a Problem for the Surgeon. H. Gordon, Louisville.—p. 341.
Gonorrheal Urethritis in the Male. W. P. McKee, Eminence.—p. 343.
Present Status of Thymus and Pineal as Endocrine Organs. H. Lawson, Louisville.—p. 345.
Mumps: Report of Case Treated with Azosulfamide (Neoprontosil). R. E. Smith, Henderson.—p. 348.

Missouri State Medical Assn. Journal, St. Louis

37:333-368 (Aug.) 1940

- Acute Suppurative Pleurisy. J. W. Gale, Madison, Wis.—p. 333.
*Pneumoperitoneum in Treatment of Pulmonary Tuberculosis: Report Based on Study of Fifty Cases. L. C. Boisliniere, J. J. Boucek, C. E. Gerson and A. C. Henske, St. Louis.—p. 337.
Pyelonephritis, Chronic Arthritis and Auricular Fibrillation. P. T. Bohan, Kansas City.—p. 342.
The Crippled Child. A. O'Reilly, St. Louis.—p. 346.
Subdural Hematoma, with Special Reference to Its Surgical Treatment, with Analysis of 245 Cases. R. M. Klemme, St. Louis, and R. M. Stuck, Denver.—p. 347.
Horseshoe Kidney Causing Dystocia and Requiring Cesarean Section. L. P. Fitz Gerald, St. Louis.
Treatment of Pteriochondric Fracture of Femur with a Leg Bolt. S. M. Leydig and T. P. Brookes, St. Louis.—p. 354.
Staphylococcus Aureus Septicemia Treated with Sulfamethylthiazole: Report of Two Cases. J. F. Dowd, Clayton.—p. 358.
Future Vistas in Field of Medicine. F. A. Carmichael, St. Joseph.—p. 361.

Pneumoperitoneum in Pulmonary Tuberculosis.—

According to Boisliniere and his collaborators, numerous investigators have reported in the last three decades experiences with pneumoperitoneum in tuberculous enteritis and peritonitis with apparently satisfactory results. Banyai was first to observe the effect of pneumoperitoneum on pulmonary tuberculosis. The authors have employed this method during the last eighteen months in fifty cases of pulmonary tuberculosis at Mount St. Rose Sanatorium. The patient is placed on his back. At a point just to the left of the rectus muscle and midway between the umbilicus and the lower costal border in the left upper quadrant of the abdomen, or at a point 2 inches below and lateral to the umbilicus, the area is swabbed with tincture of iodine and alcohol. An infiltration is made with 0.5 per cent procaine hydrochloride solution through the skin down to the peritoneum, with use of from 3 to 5 cc. of the local anesthetic. An 18 or 19 gauge pneumothorax needle is introduced through the anesthetized area into the peritoneal cavity and is connected with the pneumothorax apparatus. The needle is introduced at a slight angle to avoid direct pressure on the viscera. The amount of air usually administered at the first treatment is about 300 cc. Thereafter, at weekly intervals, amounts varying from 500 to 1,500 cc. are given, depending on the extent of the elevation of the diaphragm desired. Occasionally after the initial treatment there is slight discomfort resulting from the displace-

ment of the abdominal viscera. Usually the pain in the shoulder region and sides of the chest disappears within twenty-four hours. The mechanical effects of this procedure are (1) bilateral elevation of the domes of the diaphragm, (2) separation of the liver, spleen and stomach from the diaphragm, (3) diminution in the size of the thoracic cage, favoring a selective collapse of the diseased lung tissue and (4) selective elevation of one of the domes of the diaphragm, especially in a unilateral involvement. The mechanical effects result in the following physiologic changes: (1) lymph stasis which favors fibrous tissue formation, (2) tissue anoxemia in which tubercle bacilli cannot grow, (3) pulmonary congestion which inhibits the growth of the tubercle bacillus and (4) approximately 15 to 35 per cent reduction in the chest capacity. Twenty-six of the fifty patients were hopeless but showed a marked improvement following pneumoperitoneum. The treatment is indicated in all cases in which other methods of treatment have failed or in which such measures are contraindicated by the nature and extent of the involvement. The authors list a number of indications but admit that time alone will determine its ultimate value. They stress that the psychic effect of pneumoperitoneum is valuable, especially in the advanced cases. They do not claim that it will cure these cases, but it will relieve toxemia and prolong life.

Northwest Medicine, Seattle

39:235-274 (July) 1940

- Consideration of Protamine Insulin: Management of Surgical Diabetic and Diabetic Coma. I. A. Manville, Portland, Ore.—p. 238.
Urinary Tract Infections: Present Status of Treatment. T. R. Montgomery, Portland, Ore.—p. 243.
Rupture of Urinary Bladder. A. H. Peacock, Seattle.—p. 248.
Induced Gonorrhea. R. A. Nolan, San Diego, Calif.—p. 253.
Hypertension. N. C. Gilbert, Chicago.—p. 255.
Flora and Pollen Surveys of Seattle and Vicinity. J. E. Stroh, Seattle.—p. 258.
Congenital Obstruction of Duodenum: Correction by Duodenojejunostomy. E. B. Potter, Seattle.—p. 261.
Agenesis of Olfactory Tracts: Report of Two Cases. H. N. Rolack and M. W. Conway, Medical Lake, Wash.—p. 264.

Oklahoma State Medical Assn. Journal, Oklahoma City

33:1-58 (July) 1940

- Aminophyllin, Its Uses and Its Effect on Electrocardiogram. A. McMahon and R. A. Nussbaum, St. Louis.—p. 1.
"Assmann's Foci"—Infracavalicular Infiltration: Form of Early Pulmonary Tuberculosis in Adults. A. J. Ackermann, Oklahoma City.—p. 6.
Relationship of Spina Bifida Occulta to Back Injury. M. A. Connell, Picher.—p. 9.
Use of Sulfapyridine and Allied Drugs in Treatment of Pneumococcal Pneumonia. J. B. Morey, Ada.—p. 11.
Thiamine Chloride: Its Indications and Methods of Use. F. C. Rewerts, Bartlesville.—p. 14.

Psychiatric Quarterly, Utica, N. Y.

14:457-662 (July) 1940. Partial Index

- Transient Organic Mental Reactions During Shock Therapy of Psychoses: Clinical Study, with Electro-Encephalographic and Psychologic Performance Correlates. P. Polatin, H. Strauss and L. L. Altman, New York.—p. 457.
Prevention of Metrazol Fractures by Beta-Erythroidin Hydrochloride. S. R. Rosen, D. E. Cameron and J. B. Ziegler, Albany, N. Y.—p. 477.
Mode of Action of Ergotamine Tartrate in Psychotic Patients. Esther B. Tietz, Cincinnati.—p. 481.
The Psyche as Object of Hypochondriac Preoccupation. R. C. Hunt, Rochester, N. Y.—p. 490.
Preliminary Report on Results of Treatment of Schizophrenia by Nitrogen Inhalation. B. Lipetz, Albany, N. Y.—p. 496.
Significant Factors in Readjustment of Women Patients with Masculine Tendencies. J. H. Wall, White Plains, N. Y.—p. 504.
Report on 441 Cases Treated with Metrazol. S. Kwalwasser, Orangeburg, N. Y.—p. 527.
Effect of Treatment of Intercurrent Somatic Disease on Psychogenic Disorders. F. M. Criden, Queens Village, N. Y.—p. 547.
Rationale of Specific Therapy for Pneumococcal Pneumonias. J. G. M. Bullowa, New York.—p. 568.
Some Observations on Treatment of Institutional Epileptics with Dilantin. J. J. Doltolo and C. L. Bennett, Poughkeepsie, N. Y.—p. 595.
Response of Various Types of Epilepsy to Dilantin Therapy. H. K. Johnson, Orangeburg, N. Y.—p. 612.
Psychoses Associated with Myxedema: Report of Two Cases. I. N. Wolfson, Poughkeepsie, N. Y.—p. 619.
Psychosomatic Relationships in Ulceromembranous Stomatitis. J. L. Bennett, Queens Village, N. Y.—p. 632.

South Carolina Medical Assn. Journal, Greenville
36:185-210 (July) 1940

- Fever. R. H. Timmerman, Batesburg.—p. 185.
Review of 228 Cases of Pneumonia, with Particular Reference to Sulfa-pyridine Therapy. T. L. Takacy, Greenville.—p. 186.
Heart Pain. O. W. Bethea, New Orleans.—p. 191.

Surgery, St. Louis
8:1-168 (July) 1940

- *Therapeutic Use of Antitoxin in Experimental Tetanus. H. B. Shumacker Jr., W. M. Firor and A. Lamont, Baltimore.—p. 1.
Pancreaticohepatic Syndrome: Pancreatic Fibrosis and Fatty Liver. W. H. Cole and J. S. Howe, Chicago.—p. 19.
*Late Phase of Congestive Splenomegaly (Banti's Syndrome) With Hematemesis but Without Cirrhosis of Liver: Further Observations on Etiology of Banti's Syndrome and Effect on Prognosis of Certain Variations in Portal Venous Pattern. L. M. Rousselot, New York.—p. 34.
*Prophylactic Use of Sulfanilamide in Abdominal Surgery. J. S. Lockwood and I. S. Ravdin, Philadelphia.—p. 43.
Repair of Tracheal and Bronchial Defects with Free Fascia Grafts. M. Taffel, New Haven, Conn.—p. 56.
Is Conservative Treatment of Infection or Gangrene in Diabetic Patients Worth While? H. E. Pearse and H. R. Ziegler, Rochester, N. Y.—p. 72.
Gastric Resection with Removal of Fundus in Treatment of Duodenal Ulcer. R. Zollinger, Boston.—p. 79.
Right Colectomy in One Stage. H. G. Bell and R. B. Henley, San Francisco.—p. 94.
Painful Scars. F. E. Kredel, Charleston, S. C.—p. 98.
Experimental Studies in Transplantation of Adrenal Gland. J. E. Dunphy and J. L. Keeley, Boston.—p. 105.
Some Current Problems of Anesthesia. H. K. Beecher, Boston.—p. 125.

Antitoxin in Experimental Tetanus.—Shumacker and his associates present studies on the best mode of administering tetanus antitoxin. They describe six series of experiments which demonstrate that tetanus antitoxin administered intrathecally is superior to that given intravenously in guinea pigs having received more than a lethal dose of tetanus toxin and exhibiting local tetanus, and in dogs poisoned with more than a lethal dose of toxin and showing signs of both local and general tetanus. The authors admit that their experiments do not constitute the first attempt to evaluate the therapeutic effect of intrathecal injections of antitoxin. They offer an explanation for the failure of other workers in demonstrating the superiority of antitoxin administered by intrathecal injection. Their own experiments demonstrate that the superiority of intrathecal injection holds true with general as well as with local tetanus. They feel that tetanus antitoxin given in proper amount intrathecally will be found superior to antitoxin administered intravenously in any animal poisoned with a lethal quantity of tetanus toxin, with evident symptoms of tetanus, and yet before a fatal amount of toxin has been fixed. They believe that this will hold true for any animal, tetanus sensitive or tetanus resistant, including man, and that it will hold true whether the toxin is injected into the body or liberated from tetanus organisms in the body tissue. Certain problems remain to be solved such as whether repeated intrathecal injections are more beneficial than a single one and whether the lumbar subarachnoid route is as efficacious as the cisternal.

Congestive Splenomegaly Without Hepatic Cirrhosis.—According to Rousselot, the usual intrahepatic lesion producing congestive splenomegaly is cirrhosis of the liver. In this report, however, he is concerned with a selected group of fifteen patients all presenting the typical symptoms usually associated with Banti's syndrome and all with gastrointestinal bleeding as a dominant symptom, and yet in no case was there coexistent liver cirrhosis. The nonexistence of hepatic cirrhosis was established by most of the available methods. These procedures included various liver function tests carried out before operation, gross examination of the liver at operation, and liver biopsy on one or more occasion in the same patient. There was evidence not only that cirrhosis was absent at the time of operation but that it did not develop, as established by the subsequent clinical course and further laboratory studies for varying periods up to nineteen years after operation. The etiology of splenomegaly can be explained on a mechanical basis; an extrahepatic obstructive factor was demonstrable in the portal venous system of eight of the fifteen patients examined. This was recognized at the operating table in four instances, and four times it was demonstrable only at autopsy. The failure to discover an obstructive factor in the other seven cases is not necessarily a weakness in

the author's hypothesis but is due rather to the technical difficulties involved in an operative examination of the portal venous bed away from the splenic hilus, particularly behind the head of the pancreas. The nature of the extrahepatic lesions responsible for obstruction to splenic blood was thrombosis of the splenic vein, thrombosis at the junction of the splenic with the portal vein, stenosis of the portal vein just below the liver, stenosis of the portal vein above the entrance of the splenic vein, cavernomatous transformation of the portal vein and cavernomatous transformation of the junction of the portal vein and splenic veins. In every instance in which splenic vein pressures were taken at operation, a "portal hypertension" could be determined. The evidence presented contradicts the sequence described by Banti of a primary splenomegaly and a subsequent cirrhosis due to a hypothetical toxic agent. The author stresses the frequency of anomalies in the portal system. In this group of cases of congestive splenomegaly due to extrahepatic obstructive lesions the prognosis and variations in clinical behavior were dependent on two factors: (1) the site of the obstructive lesion and (2) variants in the anatomy of the venous pattern. As far as the author knows, this concept is presented for the first time.

Prophylactic Use of Sulfanilamide in Abdominal Surgery.—Lockwood and Ravdin began in 1938 to resort to sulfanilamide in the treatment of inflammatory and traumatic bowel perforations. Impressed with some of the recoveries, they have introduced prophylactic use of sulfanilamide in all bowel resections. A series of twenty-two consecutive colon resections of various types, sixteen for carcinoma and six for nonmalignant lesions, is presented. The type of operation varied with the location and extent of the lesion and the condition of the patient. Ileocolostomy, employing an open technic, was employed in six instances. In the rest the involved bowel was resected and one or both ends of the resected intestine were brought out as a terminal or a double-barrel colostomy. In no case was there clinical evidence of peritonitis during the postoperative course. One death was due to coronary occlusion on the first postoperative day. This series is small and of doubtful statistical significance. The authors, however, have been encouraged by the results of prophylactic sulfanilamide therapy in the first year of its trial. They present six instances of inflammatory and traumatic perforation of the intestinal tract in which sulfanilamide treatment was used. The recovery of the two patients with local peritonitis associated with sigmoid diverticulitis is perhaps not at all remarkable, but in the other four cases the nature of the lesions found at operation and the immediate condition of the individual patients was such as to lead the authors to believe that the prognosis was extremely grave. Surgeons have been hesitant to employ sulfanilamide and its derivatives in the prevention and treatment of peritonitis of intestinal origin because of a well entrenched belief that sulfanilamide is effective only in infections due to certain cocci. The authors gained the impression that, under special experimental or pathologic conditions which favor drug action, sulfanilamide may have some degree of antibacterial effect against almost all species of pathogenic bacteria. Peritonitis of intestinal origin is a polymicrobial infection, and the bacteria concerned in its production are relatively, but not entirely, resistant to sulfanilamide bacteriostasis. This bacteriostatic effect may become significant in the peritoneal defense against postoperative peritonitis if an adequate concentration of the drug is present, if the number of contaminating organisms is small, if tissue necrosis is minimal and if the usual cellular defense is present. Clinical experience is as yet insufficient to warrant a final conclusion as to the effectiveness of sulfanilamide in the prevention of peritonitis.

West Virginia Medical Journal, Charleston
36:337-392 (Aug.) 1940

- Developments in Organized Medicine, 1939-1940. F. V. Langfitt, Clarksville.—p. 337.
Treatment of Gonorrhea in the Male. D. E. Scott, Lexington, Ky.—p. 341.
Clinical Observations in Treatment of Gonorrhea with Sulfapyridine. C. A. Hoffman, Huntington.—p. 347.
Traumatic Hernia of Diaphragm with Complications: Case Report. L. S. King, Philippi.—p. 352.
Care of the Premature Infant. T. W. Nale, Charleston.—p. 356.
Significance of Electrocardiography in General Practice. S. M. Jackson, Cumberland, Md.—p. 361.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

52:205-232 (July) 1940

Critical Review of Pigment Research in the Last Hundred Years. E. Meirowsky.—p. 205.

Poikiloderma Atrophicum Vascular: Case. S. W. Smith.—p. 218.

Kaposi's Varicelliform Eruption: Some Experimental Findings. F. R. Bettley.—p. 222.

British Medical Journal, London

2:39-72 (July 13) 1940

Medical Treatment of Peptic Ulcer. E. Spriggs.—p. 39.

Surgical War Experiences. A. Odelberg.—p. 43.

Rationale of Complete Immobilization in Treatment of Infected Wounds. J. Trueta and J. M. Barnes.—p. 46.

*Transfusion of Fresh and Stored Blood. H. F. Brewer, M. Maizels, J. O. Oliver and Janet Vaughan.—p. 48.

Hypertonic Sodium Sulfate: Practical Applications. J. C. Lyth.—p. 53.

Use of Fresh and Stored Blood in Hemorrhages.

Brewer and his associates sought to determine the relative therapeutic value of fresh blood (stored for less than twenty-four hours) and stored blood (kept from ten to fourteen days) in acute and nonacute hemorrhage and the relative incidence and character of the reactions on the basis of 153 cases (fifty-eight fresh blood, ninety-five stored blood). The transfused blood used was mixed in the ratio of two parts of blood to one part of a solution consisting of 3 per cent dextrose in 0.85 per cent sodium chloride and 1.05 per cent sodium citrate. The investigators were in full accord that stored blood was as valuable as fresh blood in the treatment of acute hemorrhages but were not so certain in nonhemorrhagic involvements. Stored blood in many cases gave a rise in hemoglobin (Haldane's method) as high as that produced by fresh blood. However, on the average, the gain was greater with fresh blood. For purposes of comparison, hemoglobin readings were taken at approximately twenty-four hours, forty-eight hours and after the fifth to the seventh day after transfusion. Differences in blood pressure for the two blood groups showed a remarkable equality; those in pulse rate were very small and could be attributed to chance. Mild reactions, excluding rise of temperature, occurred more commonly after the use of stored blood. Severe rigor was found to be practically identical in the wake of either blood transfusion (4.7 as against 5.4 per cent). In no case was a really serious reaction with jaundice and hemoglobinuria noted or a difference in the rise of temperature after the use of fresh or stored blood in nonacute hemorrhages whether used warm or cold. However, it was found to be advantageous to warm blood to approximately body temperature. The analysis revealed no connection between the amount of blood given and the risk of reactions or between the rate of administration and the risk of reactions. In a total of 153 cases no severe hemolytic reaction occurred nor fatal results attributable to the transfusion. The authors indicate that the subject requires further study.

Glasgow Medical Journal

16:1-34 (July) 1940

*Prognosis in Diabetes in Childhood: Review of Seventy Cases. D. H. Wallace.—p. 1.

Thrombosis of Abdominal Aorta, with Report of Case. J. Ronald and Margaret Leslie.—p. 7.

Prognosis in Diabetes of Childhood.—Wallace points out that since the discovery of insulin the outlook in diabetes has undergone a complete change, especially with regard to children. Whereas in preinsulin days few children lived for more than two years after the onset of the disease, now prospects of life and of a reasonably comfortable and useful existence are greatly enhanced. An analysis is presented of the results of treatment of patients admitted to the Royal Hospital for Sick Children, Yorkhill, since the institution of insulin therapy in 1924. Seventy-seven cases have come under observation. Of this number seventy have been followed up with a view of determining the initial and late results of control and supervision. Eighteen of the seventy have died: four in coma associated with some infection, two of uncomplicated infection, eleven in coma

without any other cause and one from prematurity and atresia of the pancreas. The average duration of life in these eighteen cases was 2.3 years. The majority of the deaths occurred within two years of the onset of the disease. The prognosis improves in children who have survived for longer than that period. The mortality rate was higher in those patients who did not attend the outpatient clinic after dismissal from the hospital than in those who did attend. The average duration of the disease in the fifty-two patients who are still alive has been 4.14 years. In these, tolerance has improved in seventeen cases, has diminished in twenty-six and is stationary in nine.

Journal of Laryngology and Otology, London

55:237-268 (May) 1940

Keratitis Pharyngis. G. Swinburne.—p. 237.

The Staging of Malignant Disease: Carcinoma of Esophagus. W. M. Levitt.—p. 251.

Journal of Mental Science, London

86:591-750 (July) 1940

Unilateral Hydrocephalus: Report of Two Cases of Nonobstructive Type. R. M. Stewart.—p. 591.

Physical Types and Their Relations to Psychotic Types. J. I. Cohen.—p. 602.

Follow-Up Study of Hyperkinetic Children. E. Guttmann and Mildred Creak.—p. 624.

Differentiation of Neuroses and Psychoses, with Special Reference to States of Depression and Anxiety. C. H. Rogerson.—p. 632.

Observations on Autonomic Functions During Hypoglycemic Treatment of Schizophrenics. C. S. Parker.—p. 645.

*Convulsion Therapy by Ammonium Chloride. E. C. Dax.—p. 660.

Psychotherapeutic Approach in Schizophrenia. M. Gwendoline Ernst.—p. 668.

Vitamin C in Senile Psychoses: Preliminary Report. P. Berkenau.—p. 675.

Mirror Writing in Normal Adults. J. C. Batt.—p. 680.

Blood Sugar Changes Following Cardiazol Treatment. J. E. O. N. Gillespie.—p. 688.

Convulsion Therapy with Ammonium Chloride.—Dax used pure ammonium chloride, 10 cc. of a 5 per cent solution given as rapidly as possible, to produce convulsions in twenty-four mentally disordered patients. The injections were given twice a week. Sixteen of the patients had received no previous treatment, four had completed a course with metrazol or azoman (3-ethyl-4-cyclohexyl-1, 2, 4-triazol) without success and four received injections during a course which had been commenced with metrazol or azoman. Ten of the sixteen patients had schizophrenia from two to ten years. Of the other six patients, one had involutional melancholia, two had mania with no signs of recovery, one was confused and not improving and the other two were depressed. Of the schizophrenic patients the one acutely affected had thirteen injections of ammonium chloride with some improvement, though she remained impulsive in her actions, hallucinated for hearing and uncertain in conduct. After nine injections of metrazol she recovered and has been discharged. A girl with a previous remission recovered and was discharged after nine ammonium chloride convulsions. Of the remaining eight patients four showed improvement, one had heart failure after five convulsions though making good progress and three were no better and were given other convulsants. The patient with involutional melancholia had twenty fits with improvement and now appears to be recovering. The confused patient had ten injections with little change and is now awaiting discharge after three metrazol convulsions. One of the patients with melancholia had twenty ammonium chloride fits with only moderate improvement. One injection of metrazol was given, but she complained of pain following the fit and a small fracture of a dorsal vertebra was found. The other melancholic patient had thirteen fits with ammonium chloride, resulting in only a slight improvement, but after four injections of metrazol she recovered. One patient with mania showed little improvement with ammonium chloride and has improved on other convulsants. The other mania patient had ten ammonium chloride convulsions and became a little less restless; these were followed by one injection of metrazol, one of azoman and three of ammonium chloride; she then recovered. The four patients who had previously been given convulsion therapy were schizophrenic. Two had fifteen ammonium chloride convulsions without effect. The other two, given sixteen and twenty-eight injections of ammonium chloride respectively, have

shown considerable improvement. Both have been ill for more than three years and previous treatment with metrazol and azoman gave little improvement. Of the four remaining patients only one improved considerably after eleven metrazol injections and was discharged as recovered after a further ten convulsions with ammonium chloride had been given. The author states that the muscular movements following ammonium chloride injections are so slight, in comparison with the convulsions produced by other drugs, that the risks of fracture or dislocation appear negligible provided the staff does not interfere during the fit. The results of ammonium chloride convulsions are not nearly as good as when metrazol or azoman is used; however, the risk of fractures is negligible and the elevation of blood pressure after the fit is comparatively small. It may be found useful in completing courses of treatment after an improvement has been obtained with other drugs. It seems worth trying when metrazol or azoman has failed and it may prove useful for the older, more feeble or bedridden patients.

Lancet, London

2:31-60 (July 13) 1940

*Closed Plaster Treatment of Infected Wounds. G. R. Girdlestone.—p. 31.

*Vincent's Disease Treated with Nicotinic Acid. J. D. King.—p. 32.
Extrapleural Cardio-Omentopexy. A. K. Henry.—p. 35.
Survival of Meningococci on Swabs and Blood Agar. A. W. Downie.—p. 36.
Treatment of Compound Fractures of Leg. G. K. McKee.—p. 38.
Injury to Tympanic Membrane Caused by Explosions: Report of Six Cases. D. H. Craig.—p. 40.

Closed Plaster Treatment of Infected Wounds.—Girdlestone thinks that there is no need to reject enclosure of the wound and immobilization of the soft tissues, because the full ritual is in part contraindicated. 1. In the débridement, the general rule is to excise, as far as practicable, infected tissues and tissues devitalized by bruising or by the impairment of circulation. 2. It is advisable to lay open rather than suture when suturing would involve tension and devitalization of the skin or deep parts. 3. There should be a varying degree of "saucerization," which allows natural retraction of the muscles to the position of equilibrium and involves a laying open for free drainage of all pockets or areas of heavily infected or damaged tissue which cannot properly be excised. For serious destructive wounds the requirements vary from the saucer to the cup; but there are many wounds in which no such formidable exposure of the deep tissues is indicated. Nothing more may be needed than a layer of broad wick laid between the edges of the wound after débridement. 4. The plaster splintage has a dual purpose: (a) the restoration of function by keeping the bones, joints and muscles at rest in the chosen position; (b) defense against the spread of infection by keeping the cellular infiltration undisturbed in the tissues and lymph channels round the wound. 5. This is favored by a particular technic of enclosure of the wound in that part of the plaster which covers the exposed tissues. It should apply an even gentle pressure similar to that normally exercised by the fascia and the skin. 6. The closed plaster treatment eliminates frequent dressings, which mean either pain or repeated anesthesia for the patient and are both time consuming and expensive. It has been said that after two or three days the closed plaster method is not applicable to a dirty wound because excision is no longer practicable. This is a great mistake, for in the author's opinion no method of treating can compare with closed plaster after saucerization, which may include laying open all heavily infected areas. A wound that will benefit from saucerization and enclosure does not always need excision; indeed, excision is generally contraindicated in the presence of established sepsis. On the other hand a late wound which has been unsuccessfully treated by excision and suture may need the whole ritual. It has been said that for wounds near a joint this method is unsatisfactory on account of resultant stiffness. It is true that when early excision and suture without tension can be undertaken the method need not be applied. But where the wound has involved widespread laceration and devitalization of tissues or where, owing to lapse of time, there is spreading infection, the closed plaster method gives not only relative safety of life and limb but also a better prospect of movement. The method has been

decried because a number of wounded men have reached the hospital with wounds doing badly from extensive pressure sores. Probably the surgeons were imperfectly familiar with the method, for he who would apply plaster in war must be skilful in its use or he will be a danger to his patients and bring undue discredit on the method.

Vincent's Disease Treated with Nicotinic Acid.—King directs attention to the possibility of an association between pellagra and Vincent's disease. He was told by Platt that among the natives of Nyasaland an inflammation of the gums was common and that smears showed the organisms typical of Vincent's angina. Since these lesions did not respond to vitamin C or to local treatment with neoarsphenamine it was thought that the gingivitis might be an early manifestation of pellagra, which is common in Nyasaland and therefore might be cured with nicotinic acid. In a case in which cooperation could be obtained, a week's course of nicotinic acid effected cure. Reports on pellagra reveal that stomatitis and glossitis are nearly always present. Indeed the effect of various treatments on these oral manifestations of pellagra has been used as a criterion of their efficacy. Moreover, in typical cases of pellagra fusiform bacilli and Spirochaeta vincenti are commonly found. Four cases of severe Vincent's disease were successfully treated with nicotinic acid by mouth. Inoculation of the author's mouth with infected material from a severely affected patient failed to induce inflammation or ulceration. The organisms grew in abundance for a short time, but they had disappeared three days after the inoculation. A similar experiment on a monkey caused gingivitis, which subsided within ten days without treatment. A study was begun of the excretion of nicotinic acid in the urine of four persons with "normal" gums and of one with Vincent's gingivitis. The patient with Vincent's angina showed an abnormally small amount of nicotinic acid excreted in the urine compared to that of the four people with healthy mouths. A larger number of investigations is necessary before conclusions can be drawn. It is suggested that Vincent's disease may be related to deficient intake or utilization of nicotinic acid and its allied pyridine derivatives of the vitamin B₂ complex. The author's failure to sustain the growth of fusiform bacilli and spirochetes in his mouth and their relatively rapid disappearance from a monkey's mouth suggest that spread of the disease may be determined by some constitutional factor. The experiences of health authorities during the last war, however, makes it still advisable to treat the lesions as infections.

Medical Journal of Australia, Sydney

1:747-780 (June 1) 1940

Studies in Tuberculosis: I. Incidence of Tuberculosis Infection In and About Sydney, New South Wales, as Shown by Intracutaneous Tuberculin Test. D. Anderson.—p. 747.
Some Aspects of Thyrotoxicosis in New South Wales. N. Wyndham.—p. 756.
Tick Paralysis: Dangerous Disease in Children. D. G. Hamilton.—p. 759.

1:781-814 (June 8) 1940

Studies in Tuberculosis: II. Tuberculosis Infection in Nurses, with Special Reference to Incidence in New South Wales. D. Anderson.—p. 781.
Factors Affecting Vitamin C (Ascorbic Acid) Content of Fruit and Vegetables. Kathleen W. Robinson and R. Courtice.—p. 786.
Technic for Estimation of Gas Tensions in Tissues by Gas Depot Method. E. W. Silbree.—p. 788.
Treatment of Gas Gangrene with Sulfanilamide and Related Compounds. Note. E. Singer.—p. 796.

1:849-884 (June 22) 1940

Further Observations on Incidence of Hemolytic Streptococci in Tonsils. I. Macdonald, R. T. Simmons and E. V. Keogh.—p. 849.
*The Schultz Syndrome (Granulocytopenia), with Special Reference to Its Treatment with Extract of Yellow Bone Marrow. E. B. Drevermann and Hilda J. Gardner.—p. 851.
Treatment of Fractures, with Special Reference to Fracture of Surgical Neck of Humerus. D. Donald.—p. 858.
Studies in Tuberculosis: V. Intensity of Tuberculin Reaction and Its Relationship to Frequency of Radiologically Recognizable Tuberculosis in Apparently Healthy Young Adults. D. Anderson.—p. 861.
Some Physiologic Effects of Heat and Light. E. P. Dark.—p. 863.

The Schultz Syndrome (Granulocytopenia).—Drevermann and Gardner report six cases of Schultz syndrome, granulocytopenia, and four cases of other blood dyscrasias (myeloid, lymphatic and monocytic leukemia and aplastic

anemia). Some patients recover without any treatment other than cessation of the causal drug, but the condition must be treated as a medical emergency because death may follow the onset and therefore the withholding of any form of recommended treatment is not justified. Treatment includes roentgen therapy, nucleic acid, pentnucleotide and liver extract. Roentgen therapy is regarded as useless. More recently, extract of yellow bone marrow has been used. The authors have followed the method of Zichis for the preparation of the extract but have carried the saponification further and have obtained a product similar in appearance to that of Marberg and Wiles. Arrest in development of the polymorphonuclear cells may take place at different stages and a special substance may be required for each, and since it is not possible to distinguish clinically the stage at which arrest has occurred the authors suggest that pentnucleotide and yellow bone marrow extract be given simultaneously to all patients. Each may play a part in the maturation of the polymorphonuclear leukocytes. In some cases liver extract may prove to be of value. Two recoveries have been had with marrow extract. In another case the blood picture returned to normal; but, despite this, death occurred. The other three patients failed to respond when treated with marrow extract and/or pentnucleotide. Therefore marrow extract is not specific in all cases and should be used in conjunction with pentnucleotide. Marrow extract was of no value in the other four blood dyscrasias. All four patients died.

Dermatologica, Basel

81:281-344 (May) 1940

- *Oral Treatment of Gonorrhea with Sulfapyridine. B. Meier.—p. 281.
Fatal Case of Syphilis with Dermatitis and Icterus Treated with Arsenamine and Bismuth Compounds. M. Winkler.—p. 297.
Observations in Treatment of Gonorrhea in Men with Sulfanilamidopyridine. G. von Dörzy.—p. 310.
Seborrhea, Common Acne, Conglobate Acne, Acne Rosacea, Diseases of the Sweat Glands, Hair, Nail and Pigment Disturbances. A. Ackermann.—p. 316.
Dermatoses Mainly from External Causes. W. Lutz.—p. 330.

Oral Treatment of Gonorrhea with Sulfapyridine.—Meier reports on oral treatment of 173 cases of gonorrhea with sulfapyridine. Most patients received one course of treatment of thirty tablets in decreasing doses within six days. Where the first course of treatment did not bring about a complete cure, a second course of thirty-six tablets was given from ten to fourteen days later. Local treatment was also administered. Ninety-five and nine tenths per cent of the patients were cured, with men reacting slightly better to the drug. Sulfapyridine was effective in new as well as in chronic cases and satisfactory results were obtained in complicated cases. There were slight reactions in forty-five cases and cutaneous rashes of brief duration in two instances. A survey of the literature reveals that on the average 86.7 per cent of 1,586 cases of gonorrhea were cured with sulfapyridine. Higher dosage with local treatment was observed to produce better results than lower dosage without local treatment.

Semana Medica, Buenos Aires

47:57-112 (July 11) 1940. Partial Index

- *Cancer of Testes: Present Status of Knowledge. R. Bernardi.—p. 57.
Anorectal Fistulas: Classification. J. A. Garat.—p. 97.

Cancer of Testes.—Bernardi discusses the diagnosis, prognosis and treatment of cancer of the testes and presents a review of the literature and results of his experience in thirty-two cases. The incidence of testicular cancer is from 0.5 to 2 per cent as compared with cancer of other structures. The incidence of cancer in ectopic testes not operated on is from 0.5 to 2 per cent as frequent as that of cancer of the normal testes. Cancer of an ectopic testis which has been brought down into the scrotum by surgical intervention is more common than it is in the ectopic nontreated testis. Testicular cancer develops without giving rise to early symptoms, with more or less acute increase in the volume of the organ and a change in its consistency. Chevassu's palpation of the epididymis and certain hormonal tests are the most reliable diagnostic procedures. Hormonal reactions give positive results between the first and third month of the appearance of local symptoms and in recurrence or the appearance of metastases.

The more malignant the type of tumor, the higher the figures of the reaction, the highest figure being obtained in chorion-epithelioma. Negative results of hormonal reactions suggest the absence of a testicular tumor or the presence of a teratoma. Prognosis depends on the nature and histologic structure of the tumor, the absence or presence of metastases, their seat and extent and especially on the early diagnosis and the opportunity of an early castration preceded and followed by roentgen irradiation. The author advises castration even in the presence of a tumor sensitive to irradiation and systematic roentgen therapy before and after castration with preoperative irradiation of the supraclavicular and lumbosacral lymphatic chain and postoperative irradiation of the mediastinal and left supraclavicular regions. The course of the disease after castration and roentgen therapy is periodically controlled by repeated hormonal tests, positive results indicating the advisability of further roentgen therapy. This treatment was practiced in ten of the thirty-two cases. Satisfactory results were obtained in the absence of metastases. In cases of lumbosacral metastases irradiation diminished their size and alleviated the pain.

Geneeskundig Tijdschr. v. Nederl.-Indië, Batavia

80:1621-1668 (July 2) 1940

- *Determination of Nicotinic Acid in Patients with Nutritional Edema in Central Java. A. G. van Veen and R. S. Dhanoedibrotro.—p. 1622.
Further Observations on "Sweet Potato Louse" from Suriname with Remarks on Reaction of Human Skin to Presence of Mite Larvae. P. H. van Thiel and H. van Ommeren.—p. 1638.
Local Cutaneous Allergy: Diphtheria of Skin. D. P. R. Keizer.—p. 1655.
Several Unusual Lesions of External Male Genitalia. J. H. Maasland.—p. 1659.

Determination of Nicotinic Acid in Nutritional Edema.—According to van Veen and Dhanoedibrotro, nutritional edema occurred rather frequently in central Java during 1939. Successive crop failures were the cause. It is noteworthy that, although the nutrition was deficient in many respects, only edema and sometimes slight pellagra-like symptoms but no other deficiency symptoms were observed. Diet surveys and medical examinations were made. A number of analyses were done on the vitamin A, vitamin B₁, nicotinic acid and protein contents of the blood of patients with nutritional edema and of the members of their families. The blood of patients with nutritional edema, some of whom showed pellagra-like symptoms, was analyzed for the concentration of nicotinic acid when the patients entered the hospital. Because the nutrition had been deficient for a long time and in practically every respect, it was to be foreseen that no pure and uniform deficiency syndromes would appear. Moreover, these syndromes were blurred by ancylostomiasis, which is a frequent concomitant of poor nutrition, and sometimes by various other diseases (malaria, dysenteries). In some cases a low content of nicotinic acid was found in the urine but since it was impossible to get the twenty-four hour volumes or to learn whether anuresis or diuresis was present when the patients entered the hospital these determinations do not have great value. More attention was paid to the determination of the nicotinic acid level in the blood. Low nicotinic acid levels frequently occurred in the blood of the patients with edema. These low values were, however, not to be directly connected with the slight pellagra-like symptoms or with the so-called porphyrin reaction of Beck-Elfinger-Spies. On the other hand the authors found a rather close connection with the blood cell volume (as determined by the hematocrit) in the sense that a low nicotinic acid level was almost always attended by a low cell volume, which was of frequent occurrence in these chronically underfed, mostly anemic patients with edema. This connection between nicotinic acid content and hematocrit value depends on the fact that a nicotinic acid does not occur in the blood serum. With a normal cell volume a normal nicotinic acid level was usually found, but at the same time pellagra-like dermal symptoms would sometimes occur. It is likely not only that the food (chiefly Indian corn) of the patients with nutritional edema is deficient in nicotinic acid but also that the conveying capacity of the blood for nicotinic acid has been reduced by the low cell volume. It would be interesting to know whether low cell values play a part also in the nicotinic acid supply of patients with classic pellagra.

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FASCIAL REPAIR OF INGUINAL HERNIAS

REPORT OF 760 OPERATIONS FROM JANUARY 1934
TO JANUARY 1939

CHAIRMAN'S ADDRESS

THOMAS M. JOYCE, M.D.

PORTLAND, ORE.

Today the surgeon in almost every instance can assure the patient with inguinal hernia that he will be cured. Yet less than six decades ago such assurance was the exception rather than the rule. Up to that time treatment of this ancient affliction had been principally palliative.¹ In the earliest times bandages were applied to retain reducible hernias. Later the truss was introduced and throughout the centuries of its use underwent numerous modifications. Poultices and plasters of various astringent and tonic substances were long popular. Frequently a red hot cautery, varying in size and shape with the individual patient, was applied to the skin over the area of protrusion, which had previously been outlined with ink. Caustic agents were similarly employed. The object of both the cautery and the caustics appears to have been to destroy the tissues and thus to produce granulation firm enough to prevent recurrence of the protrusion. As late as the nineteenth century the first procedure resorted to in the treatment of strangulated hernia was the ancient one of taxis. When this failed, bleeding, warm baths, purgatives, opiates, local cold applications and finally tobacco clysters were tried. The ensuing faintness of the patient was believed to cause relaxation of the involved areas and so to facilitate reduction of the extruding viscera. Lawrence¹ also mentioned the local application of cupping glasses and leeches for relief of strangulation.

The injection treatment of hernia is probably almost 150 years old. According to Fowler² the Frenchman Desault, who died in 1795, treated the combined hernia and hydrocele of a 9 year old boy with injections of red wine into the scrotum and lower part of the canal. Some fifty years later this form of treatment was again practiced by workers in Europe and America.³ Both

the fluids used and the manner of injecting them varied. This means of managing hernias, however, made slow progress and with the advent of improved surgical procedures was almost forgotten. Within recent times it has once more been revived and today is widely used.

While operation for nonstrangulated hernia was practiced as early as the first century and quite possibly before that, this mode of treatment was not developed until hundreds of years later.⁴ In the middle ages the operative field was almost entirely dominated by unskilled traveling "rupture curers," many of whom were unscrupulous quacks who not only failed to effect a cure but sacrificed the testicles of their unsuspecting victims as well. On the other hand, there were gifted men among them who not only improved the prevailing treatments but devised valuable new ones. It was a celebrated rupture and stone cutter of the sixteenth century, Pierre Franco, who undertook operation for relief of incarcerated hernia, a procedure avoided up to that time. With the reintroduction of dissection of human bodies in the sixteenth century, careful study of the structures involved in the formation of hernias was made possible. Significant and revolutionary contributions began to appear and new interest in the surgical treatment of hernias was gradually stimulated. By the beginning of the nineteenth century the anatomy of hernias was well understood. Operations for strangulated hernias were relatively frequent. Then, as now, the technics followed varied considerably. The results obtained, however, were far from favorable, so that surgical intervention was resorted to only after all other procedures had failed. It was not until anesthesia was accepted and Lister's principles of antiseptics were established that the greatest obstacles to the ultimate successful treatment of hernia were removed.

In 1892 Marcy,⁵ Lister's first American pupil, argued that delayed operative intervention and not the operation was responsible for the unsatisfactory results of that period. He called attention to the fact that Sir Astley Cooper,⁶ "even in his day" (the beginning of the nineteenth century), "when the lack of anesthetics and of the requisite knowledge of proper wound treatment rendered the operation truly formidable," had recognized "the fatal error of delay." Marcy is credited with being the first to have practiced exposure of the inguinal canal by dissection, high ligation of the sac and plastic repair of the inguinal canal. In 1881 he⁷ had advocated the use of absorbable kangaroo tendon sutures.

Within a few months of each other, in 1889, appeared the independent reports of the operations devised by

From St. Vincent's Hospital and the University of Oregon Medical School Hospitals.

Read before the Section on Surgery, General and Abdominal, at the Ninety-First Annual Session of the American Medical Association, New York, June 13, 1940.

1. Andrews, Edmund: A History of the Development of the Technic of Herniotomy, *Ann. M. Hist.* 7: 451-466 (Sept.) 1935. Lawrence, William: Treatise on Ruptures, from London ed. 5, Philadelphia, Lea & Blanchard, 1843, chaps. 5-9, pp. 76-147. Raaf, J. E.: Hernia Healers, *Ann. M. Hist.* 4: 377-389 (July) 1932. Garrison, F. H.: An Introduction to the History of Medicine, ed. 4, Philadelphia, W. B. Saunders Company, 1929, pp. 35, 155, 161, 171, 220, 225, 227, 274, 321, 333, 337, 342, 344, 480, 598, 600, 730. Halsted, W. S.: Surgical Papers, Baltimore, Johns Hopkins Press 1: 261-308, 1924.

2. Fowler, S. W.: Pioneers in Hernia Injection, *M. Rec.* 146: 481-485 (Dec.) 1937.

3. Wangenstein, O. H.: The Status of the Injection Treatment of Hernia, *Ann. Surg.* 105: 323-324 (March) 1937. Raaf,¹ Halsted,¹ Fowler,²

4. Buck, A. H.: The Growth of Medicine from the Earliest Times to About 1800, New Haven, Yale University Press, 1917, pp. 452, 490. Allbutt, T. C.: Greek Medicine in Rome, London, MacMillan Company, Ltd., 1921, pp. 345, 508. Thompson, Malcolm: The Operative Story of Hernia, *Am. J. Surg.* 43: 162-168 (Jan.) 1939. Footnote 1.

5. Marcy, H. O.: The Anatomy and Surgical Treatment of Hernia, New York, D. Appleton & Co., 1892, chaps. 9 and 10, pp. 169-173.

6. Cooper, Astley, quoted by Marcy,⁵ p. 97.

7. Marcy, H. O.: The Cure of Hernia by the Antiseptic Use of Animal Ligature, *Tr. Internat. M. Congr.*, 7th session 2: 446-448, 1881.

Bassini of Italy and Halsted of America. In essentials, the two operations were the same. Bassini⁹ did a high ligation and dissection of the sac, brought the cord out through the muscles at the internal ring, placed the transplanted cord so that it lay on the internal oblique muscle and sutured the internal oblique muscle to Poupart's ligament—attempting in his repair to reestablish the obliquity of the canal. Halsted¹ constructed a new canal and a new external ring. Like Bassini, he ligated the sac as high as possible and sutured the internal oblique muscle to Poupart's ligament. The cord, however, he transplanted superficial to the aponeurosis of the external oblique. It was not long before Halsted began to modify his original technic. First he deemed it unnecessary to transplant the cord, then he discontinued his earlier practice of excising some of the veins of the cord to make it smaller. Later he incorporated a flap from the anterior sheath of the rectus muscle. Finally he employed the cremaster muscle and its fascia to reinforce the lower bed of the canal and also overlapped the aponeurosis of the external oblique. Halsted considered high ligation of the sac the most important factor in the operation.

The principles of the methods devised by Bassini and by Halsted, as every surgeon knows, are still the basis of the repairs done today. The numerous modifications of these original operations are more or less variations in the manner of disposing of the cord and of reconstructing the inguinal canal in an attempt to attain a

ing tendon as suture material. In 1901 he⁹ published a preliminary description of his method of cutting a narrow strip from the aponeurosis of either flap of the split external oblique and suturing the structures to be apposed with these strips. Both fascial strips were left

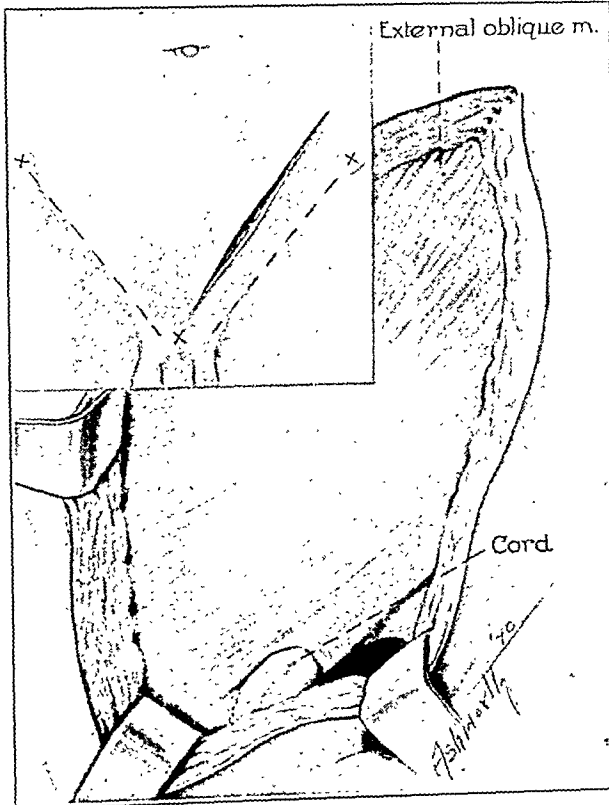


Fig. 1.—Incision.

more solid repair and thus to prevent recurrence of the hernia.

Contributing in a large measure toward the reduction of the percentage of hernial recurrences is the utilization of fascia for reinforcing the repair, particularly in the form of sutures. McArthur was the first to employ liv-

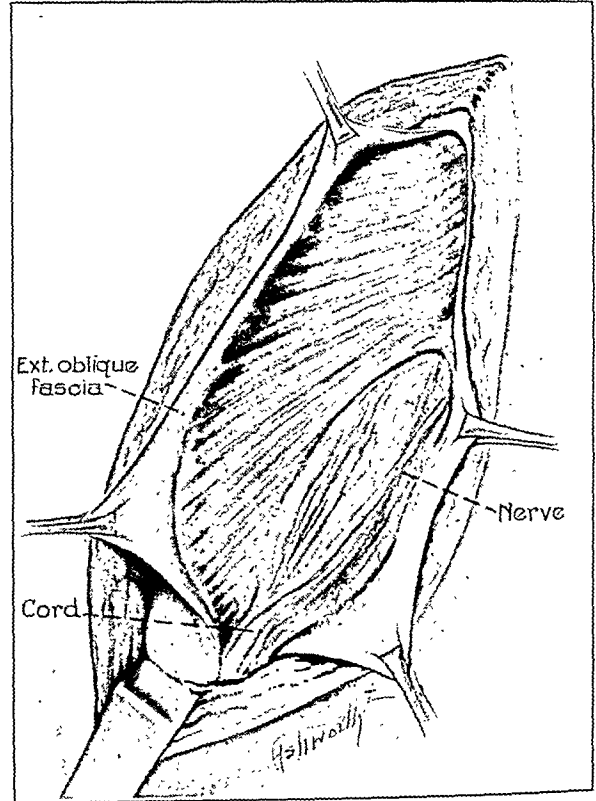


Fig. 2.—Splitting fascia of external oblique exposure of cord, nerve and cremaster muscle.

attached at the pubic spine. Nine years later Kirschner¹⁰ reported a method of overlapping the deep Bassini sutures with a rectangular patch of fascia lata. One border of this "free" fascial transplant was quilted to Poupart's ligament, the others were quilted to the abdominal musculature. The cord was brought out through a slit in the upper medial border of the transplant. Gallie and LeMesurier¹¹ in 1921 presented the results of experiments which had led them to the conclusion that a strong repair of the abdominal wall could be obtained by means of narrow fascia lata sutures. They threaded the narrow strips of fascia lata into curved large eyed needles and united the structures by interweaving the fascial sutures across the opening. For the closure of large hernial openings Gallie¹² later recommended a many tailed fascial sheet. He pulled the "tails" through the abdominal wall and then tied each opposite pair over the opening. In 1934 Wangenstein¹³ described his method of repairing inguinal hernias by means of a pedicle graft from the iliobial tract. The flap is swung into the wound up over Poupart's ligament and sutured over the cord.

9. McArthur, L. L.: Autoplastic Suture in Hernia, and Other Diastases: Preliminary Report, *J. A. M. A.* 37:1162-1165 (Nov. 2) 1901; Autoplastic Sutures in Hernia and Other Diastases: Final Report, *ibid.* 43:1039-1048 (Oct. 8) 1904.

10. Kirschner, Martin: Die praktischen Ergebnisse der freien Fascien-Transplantation, *Arch. f. klin. Chir.* 92:888-912, 1910.

11. Gallie, W. E., and LeMesurier, A. B.: The Use of Living Sutures in Operative Surgery, *Canad. M. A. J.* 11:504-513 (July) 1921.

12. Gallie, W. E.: Closing Very Large Hernial Openings, *Ann. Surg.* 96:551-554 (Oct.) 1932.

13. Wangenstein, O. H.: Repair of Recurrent and Difficult Hernias and Other Large Defects of the Abdominal Wall Employing the Iliobial Tract of Fascia Lata as a Pedicled Flap, *Surg., Gynec. & Obst.* 59:766-780 (Nov.) 1934.

The consensus at present appears to be that fascia is indicated only for hernias difficult to repair, among which are included direct inguinal, ventral and recurrent hernias. It has been my contention for some time that if fascia is desirable in the repair of difficult hernias it is just as desirable in the repair of hernias that are not difficult; furthermore, that a large percentage of recurrences could be prevented if fascia were used as a routine in the initial repair. In my own practice I repair all primary indirect inguinal and femoral hernias, as well as all direct inguinal, ventral and recurrent hernias, with fascial sutures. My technic is a modification of older procedures—combining Halsted's¹ early transplantation of the cord, Andrews' ¹⁴ imbrication of the aponeurosis of the external oblique and McArthur's ⁹ sutures from the external oblique fascia or Gallie and

external oblique has been exposed, all the areolar tissue is carefully removed from it with gauze. The fascia is then split in the line of its fibers, directly superior to the upper border of the inguinal canal, from a point above the external ring to well above the internal ring.

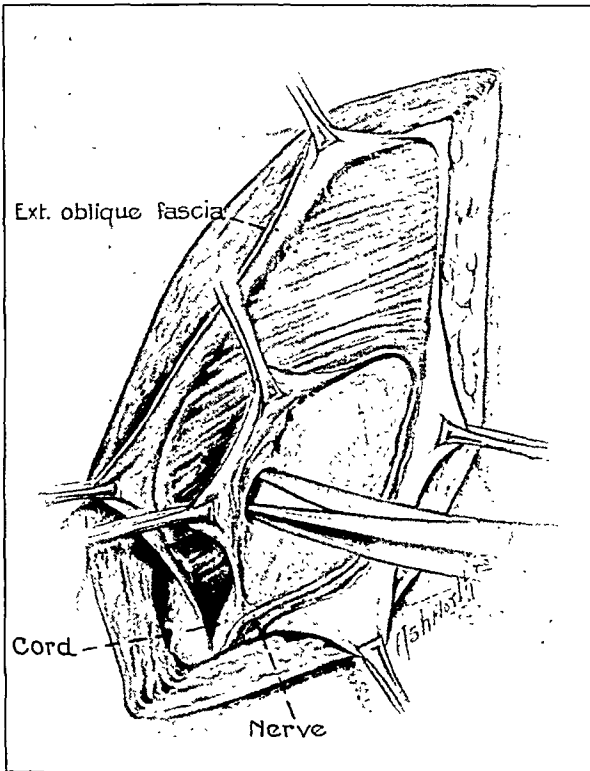


Fig. 3.—Separation of cremaster muscle from cord.

LeMesurier's ¹¹ fascia lata sutures. The most important factor in this technic is the suture of fascia only to fascia, a running fascial stitch being used for the deep line of sutures. It has been my experience that muscle sutured to fascia does not give a firm union because the muscle fibers have a tendency to separate. Gallie and LeMesurier ¹⁵ have had a similar experience. They stated that "side-to-side suture of muscle and aponeurosis, as in the suture of the internal oblique muscle to Poupart's ligament, results in union of practically no strength."

OPERATIVE PROCEDURE

An oblique incision, parallel to Poupart's ligament, is made through the skin and fat, high enough on the abdomen so that a bandage can later be applied without any inconvenience to the patient. After the fascia of the

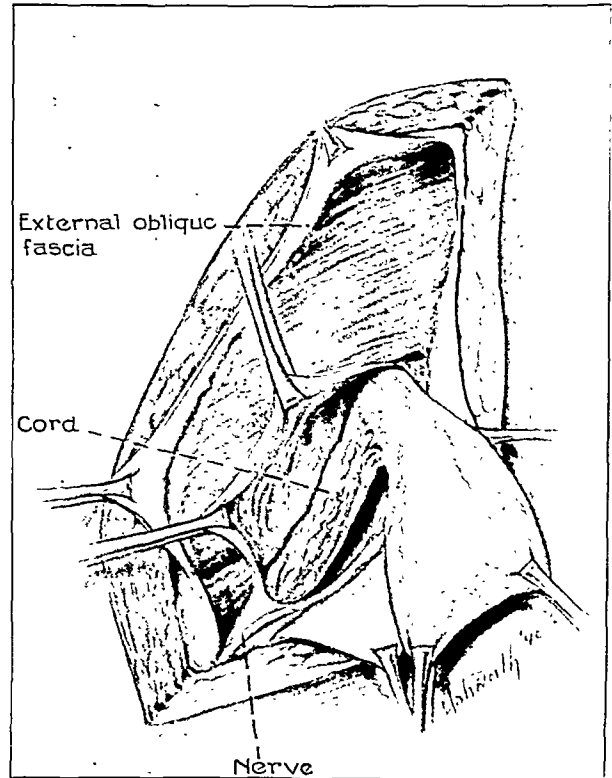


Fig. 4.—Sac, isolated cord and nerve below.

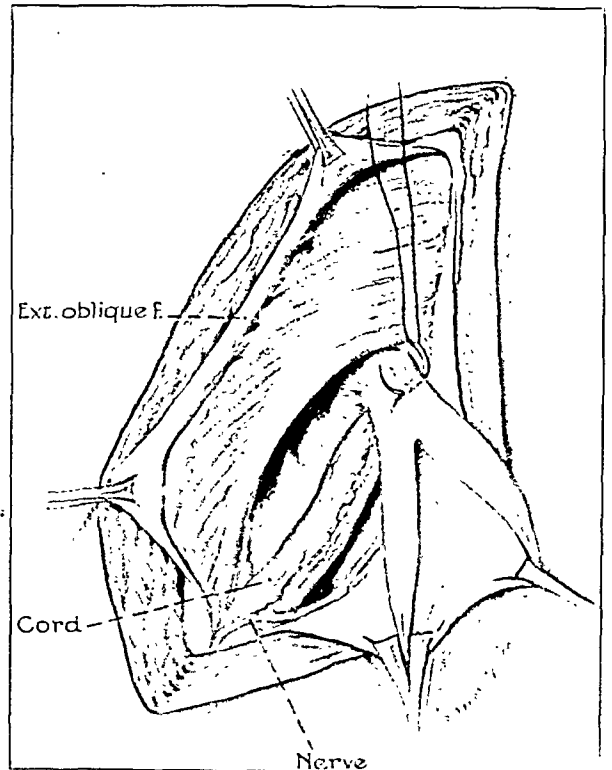


Fig. 5.—Sac opened to be ligated and excised.

14. Andrews, E. W.: Imbrication or Lap Joint Method: A Plastic Operation for Hernia, Chicago M. Rec. S: 67-77 (Aug.) 1895.
15. Gallie, W. E., and LeMesurier, A. B.: The Use of Free Transplants of Fascia as Living Sutures in the Treatment of Hernia, Arch Surg. 9: 516-529 (Nov.) 1924.

be prepared for such a contingency, one leg is always shaved the night before operation and just before the operation it is prepared for immediate use. The fascia lata strip is used to approximate the structures in the same manner as the strip from the fascia of the external

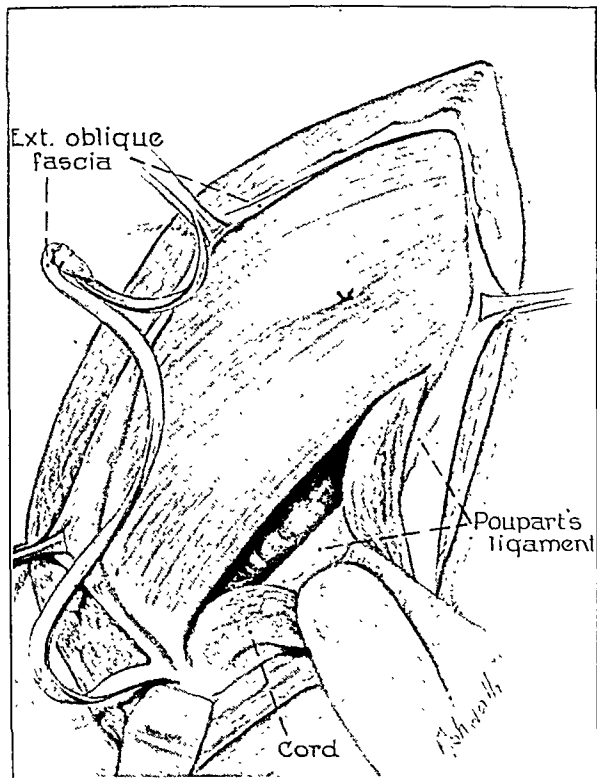


Fig. 8.—Fascia threaded on needle.

oblique. No more than one strip of fascia is ever taken from the external oblique. When it is necessary to use additional strips, they are secured from the thigh.

In the five year period from January 1934 to January 1939 my associates and I did 180 hernial repairs by this

TABLE 2.—Recurrences in Relation to Time Interval and Age

Postoperative Interval	Number of Recurrences	Age of Patient
3 weeks or less.....	2	51, 51
2 months.....	2	56, 57
5 months.....	2	48, 50, 51, 67
8 months.....	4	51, 58
10 months.....	3	46, 46, 60
1 year.....	1	53
1½ years.....	1	58
3¼ years.....	1	55

method on 149 private patients at St. Vincent's Hospital. Of these, 124 operations were traced. In this group there was one recurrence, a percentage of 0.8 (table 1).

Three hundred and ninety-one hernias on 337 patients were repaired with fascia in the University of Oregon Medical School Hospitals in a similar period. Twelve externs and residents performed 307 of these operations. The remaining eighty-four were performed by twelve staff surgeons. Of the 231 operations traced, 180 had been done by the externs and residents. There were fourteen recurrences, twelve of which followed the repairs by the inexperienced surgeons, a percentage of 6⅓ for the inexperienced surgeons and 3.92 for the more experienced surgeons (table 1). An investigation was recently made of the higher recurrence rate in the

University of Oregon Medical School Hospitals. It was found that some surgeons had not followed explicitly all the details which had originally been emphasized in the fascia to fascia with fascia technic. In some instances muscle had been sutured to fascia with fascia, in others the external oblique had been brought over to the shelving edge of Poupart's ligament and sutured with chromic catgut. In these instances the muscle had pulled away from the line of suture. On the other hand, one resident who had followed every detail of the technic with meticulous care had no recurrences in forty-three traced operations. He had done seventy-five hernial repairs, a little more than one fourth of the total number performed by all the externs and residents.

Dr. Alanson Weeks,¹⁷ chief of staff of St. Luke's Hospital in San Francisco, using the same technic, has done 176 operations. He reported one recurrence, 0.56 per cent (table 1). In a recent communication, Dr. Weeks stated that he had given instructions to the other surgeons on the staff of St. Luke's Hospital to repair the inguinal hernias of all patients entering through the clinic of that hospital by the technic described in this paper.

Dr. Otto H. Pflueger¹⁷ of San Francisco did thirteen operations on twelve patients with this method. He has had no recurrences (table 1).

The average age of the patients was 48 years. Three patients were 14 years old, the youngest, and one patient was 84, the oldest. With the exception of one

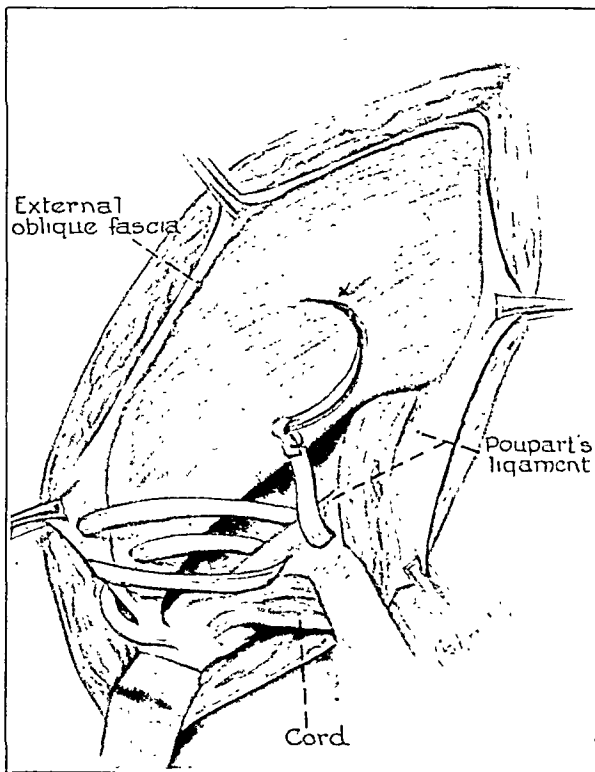


Fig. 9.—Suturing of lower border of external oblique fascia to the shelving edge of Poupart's ligament.

man with bilateral recurrences, who was 46 and another who was 48, the age of each patient who had had a recurrence was 50 or over (table 2). By far the greatest number of operations was performed on male patients.

17. Personal communication to the author.

The majority of the recurrences, as nearly as could be determined, were discovered from three to ten months after operation. In three instances the hernias recurred a year, a year and a half and three years and nine months after the repair. In one instance the hernia

causes not related to the operation at intervals of from two to three years later.

The type of anesthesia used was of no consequence whatever.

SUMMARY

1. A large percentage of hernial recurrences could be prevented if fascia was used in the primary repair.
2. The most important factor in the method of repair of the canal here described is the suture of fascia only to fascia with fascia. The operation is simple to perform; there is little danger of excessive trauma and, when all the details as outlined are observed, the results are excellent.
3. The principal steps of the technic are (a) careful removal of all areolar tissue from the fascia of the external oblique; (b) separation of the cremaster muscle from the cord, care being taken to preserve the ilio-inguinal and iliohypogastric nerves and their branches; (c) removal of all fat from the cord; (d) high ligation and transfixion of the sac; (e) suture of the fascial edge of the superior flap of the split external oblique to the shelving border of Poupart's ligament with a narrow fascial strip from either the external oblique or the thigh; (f) bringing the inferior flap of the split external oblique over the cord, and (g) suturing the edge of the imbricated inferior flap to the fascia of the superior flap of the external oblique.
4. A total of 760 operations were performed on 674 patients. Of this number, 544 operations were traced.

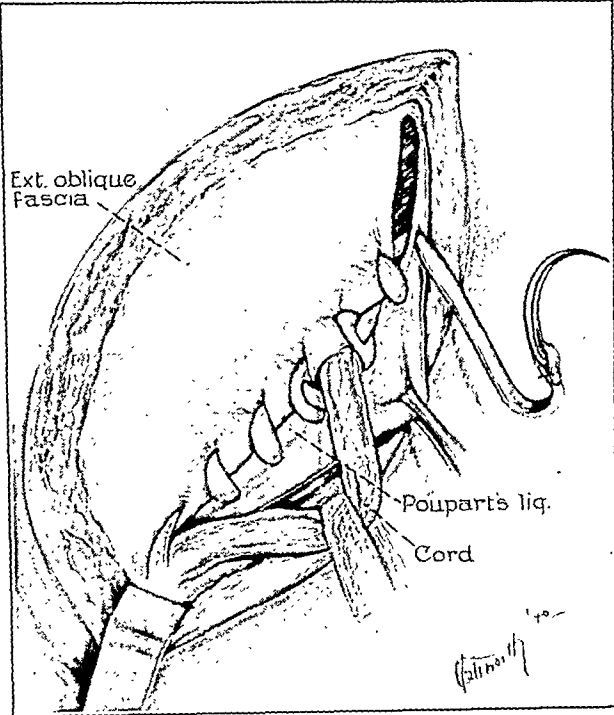


Fig. 10.—Fascial suture almost completed; note fixation about internal ring.

was noted almost immediately after operation (table 2). This was the recurrence reported by Dr. Weeks. The patient had had an obstruction in the sigmoid which required abdominal operation, and the hernia wound had become infected. There were seven other wound infections, all following operations performed at the

TABLE 3.—Incidence of Postoperative Deaths

Number of patients.....	674
Number of deaths.....	5
Percentage.....	0.74
Cause of death:	
Bronchopneumonia.....	3
Coronary thrombosis.....	1
Bilateral pulmonary embolism..	1

University of Oregon Medical School Hospitals. In this group there was one recurrence five months after operation. In my own practice I have had two infected wounds, each of which followed the fascial repair of a postoperative ventral hernia. There was no sloughing of the fascia, however, in either instance, and neither hernia recurred.

In a few instances swelling of the testicle was noted after operation. In every instance this subsided before the patient left the hospital. No atrophy of the testicle was observed.

There were five postoperative deaths (table 3) in the entire group of 674 patients, or 0.74 per cent. In three instances the principal cause of death was bronchopneumonia. One death was due to coronary thrombosis. The last was attributed to bilateral pulmonary embolism. This patient had had recurrent bilateral indirect hernias repaired. Twelve patients, or 1.79 per cent, died from

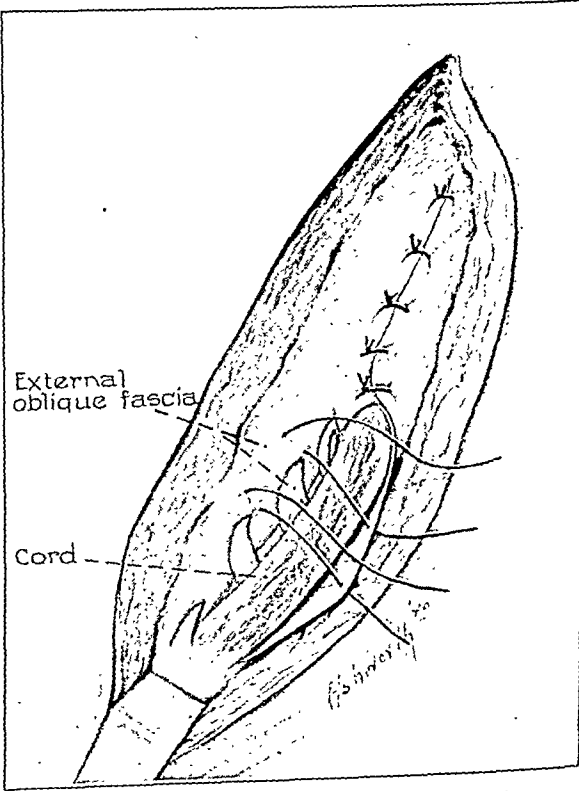


Fig. 11.—Completion of reconstructed inguinal canal.

There were sixteen recurrences, a percentage of 2.94 for all the traced operations. By individual surgeons or groups the incidence of recurrence was: Dr. Pfeuger, no recurrences in thirteen operations; Dr. Weeks, 0.56 per cent in 176; my associates and I, 0.80 per cent in 124; twelve staff surgeons of the University of Oregon Medical School Hospitals, 3.92 per cent in fifty-one,

and twelve externs and residents of the same hospitals, 6.66 per cent in 180 operations.

5. There were five postoperative deaths, or 0.74 per cent.

6. The average age was 48 years, the youngest patient being 14 and the oldest 84. In the majority of instances the age of the patients with recurrences was above 50.

7. There were eight wound infections. In two instances the infection was followed by recurrence of the hernia—almost immediately and five months after operation, respectively.

8. In all instances of swelling of the testicle the swelling subsided before the patient left the hospital. No testicular atrophy was observed.

1130 South West Morrison Street.

THE MANAGEMENT OF ACUTE CRANIOCEREBRAL INJURIES

BERNARD S. BRODY, M.D.

NEW HAVEN, CONN.

In no field of medicine do there exist more sharply opposed views than those expressed by various investigators on the subject of trauma to the brain and its membranes. The variation in teaching by men of equally large experience is hopelessly confusing to the large number of practitioners who are faced with the problems of head injury. The dissemination of opinion concerning the treatment of cranial injuries is important because the automobile has increased enormously the number of such patients for physicians in out of the way places where the services of a neurosurgeon are not readily available.

The development of the modern treatment of trauma to the brain has been influenced particularly by the work of Kocher¹ and Cushing,² by Weed and his collaborators³ and as a result of the extensive experience which came out of the World War. Kocher and Cushing described the four classic stages of brain compression and Weed found that increased intracranial tension may be influenced by changing the osmotic pressure of the blood through the agency of hypertonic solutions. As an introduction to the classification of cranial injuries I have adopted the outline of Munro (table 1), which was included in a report of 1,494 cases treated at the Boston City Hospital over a period of four and a half years. Table 2 will give some idea concerning the mortality in Munro's⁴ series. A noteworthy point is the rather small percentage of subdural and extradural hematomas, of which there were only eighty in all. The first two groups, which together comprise a total of 1,211 patients, could be classified as nonoperative. The last two groups, totaling 159 patients, may or may not have required surgical treatment, depending on the character, extent and location of the fracture.

The great majority of patients then will recover with ordinary bed rest supplemented in some instances

by lumbar puncture or hypertonic solutions. Those patients with an uncomplicated concussion should be kept in bed for approximately ten to fourteen days. Roentgenograms of the skull, when needed for medico-legal reasons or otherwise, can be taken when the patient's condition warrants the effort. A diagnostic spinal puncture should be done at some time within the first week. Any small amount of bleeding which might have been present may be missed after seven days. For patients whose spinal fluid is bloody or whose period of unconsciousness is prolonged, the diagnosis of simple concussion alone is no longer tenable and the period of bed rest must be proportionately longer.

In the final analysis, responsibility to the patient with a cranial injury resolves itself into three categories: There is first the prevention of infection, second the treatment of increased intracranial pressure and lastly the management of depressed fractures.

PREVENTION OF INFECTION

The prevention of infection, for the most part, is simply a matter of giving prompt and efficient attention to lacerations of the scalp. Also included is the prompt administration of antisera in cases in which there are contaminated wounds. More rarely one is confronted with a patient who has definite evidence of a fracture through the mastoid or paranasal sinuses in the form of cerebrospinal otorrhea or rhinorrhea. The second condition is more frequently followed by meningitis than the former. In my opinion these patients should be started promptly on sulfapyridine as a preventive measure. This drug is used because the pneumococcus is the most common invading organism. If the patient develops meningitis, a change in therapy may be indicated depending on the outcome of the bacteriologic study. Cases are seen with persistent bleeding from the nose or ear in which it is difficult to determine whether an admixture of spinal fluid is present or not. X-ray examination may be able to settle this point, as for example a fracture through the cribriform plate would strongly suggest the presence of rhinorrhea. The laminagraph has been of considerable help in this regard. Patients with rhinorrhea should be placed on isolation precautions in order to prevent as far as possible the contraction of an upper respiratory infection. Intranasal therapy should be avoided, and the patient must be on his guard against sneezing or otherwise raising the intranasal pressure for fear of forcing secretions through the fracture line into the cranial chamber. Intra-aural examination should be avoided in the case of bleeding or spinal fluid leakage from the ear. The ear should be covered with a sterile dressing and kept dependent so as to encourage external drainage. The majority of cases of spinal fluid leakage, especially from the ear but also from the nose, stop spontaneously. In some instances the drainage will persist for months or years and may eventually require surgical intervention for closure of the fistula. From the standpoint of prevention of infection, the practice of elevating the foot of the bed about 12 inches has been of material help in decreasing the incidence of aspiration pneumonia in patients who are in deep coma. The advantage gained by avoiding the gravitation of vomitus or nasal secretions into the lungs far outweighs the possible disadvantage of increasing the intracranial pressure in lowering the head below the level of the feet. This modified Trendelenburg position need be employed only when the nasopharynx seems to be filling rapidly with mucus

From the Department of Surgery, Yale University School of Medicine.
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2. Cushing, Harvey: *Concerning a Definite Regulatory Mechanism of the Vasomotor Center Which Controls Blood Pressure During Cerebral Compression*, Bull. Johns Hopkins Hosp., 12: 290, 1901.

3. Weed, L. H., and Hughson, Walter: *Systemic Effects of the Intravenous Injection of Solutions of Various Concentrations with Especial Reference to the Cerebrospinal Fluid*, Am. J. Physiol. 55: 53 (Nov.) 1921.

4. Munro, Donald: *The Diagnosis, Treatment and Immediate Prognosis of Cerebral Trauma*, New England J. Med. 210: 287-294 (Feb. 8) 1934.

or vomitus and can be resorted to intermittently rather than continuously as the conditions warrant. It is also important in deeply comatose patients to keep them on the side and to alternate the lateral position. In this way the tendency to swallow the tongue is obviated, and secretions tend to run out the angle of the mouth.

TABLE 1.—*Classification of Head Injuries**

Skull	Linear and/or comminuted fracture			
	Depressed fracture			
	Compound fracture			
	Special fractures (basilar)	Involving paranasal sinuses		
		Petrous bone		
		Cribriform plate (ethmoid)		
Brain	Concussion			
	Edema			
	Contusion and/or laceration			
	Special	Hemorrhage	Subdural or extradural	
			Rarer forms	Subpial
			Subcortical	
			Intraventricular	
			Venous sinus	
			Petechial	
	Infection	Meningitis		
		Abscess		

* Modified from Munro.

A compound depressed fracture is a condition which requires immediate attention in order to avoid the onset of a serious infection. This calls for prompt débridement of devitalized tissues, which may include some of the cerebral cortex as well, if it has been lacerated. This procedure need not leave a bone defect except in cases in which a part of the skull has been badly comminuted, because a block of bone can be removed, molded back almost to its normal contour, boiled and then replaced.

TREATMENT OF INCREASED INTRACRANIAL PRESSURE

The treatment of increased intracranial pressure revolves, of course, about the diagnosis. Those patients who present the classic symptoms of extradural or subdural bleeding, that is a short period of unconsciousness due to concussion, then a lucid interval of minutes or hours, followed by a progressive loss of consciousness, will die almost invariably unless the clot is removed. The second lapse into unconsciousness is due to cerebral compression from the clot. The evolution of the clinical picture is ordinarily much faster in the case of extradural bleeding because the hemorrhage is arterial and requires prompt surgical attention. There are, however, a group of patients who do not present this classic picture and yet harbor a definite clot. In particular the lucid interval is missing for the reason that there is, in addition to the clot, extensive underlying brain damage. In this instance the unconsciousness due to the damage of cerebral tissue per se will merge with the coma due to the increasing intracranial pressure produced by the extradural or subdural clot. These cases present a more difficult problem from the standpoint of diagnosis and constitute the group in which multiple trephine holes are indicated. In this way a clot may be located which may have been overlooked even by careful observation and a life saved if the underlying cerebral damage is not too extensive. The great majority of patients with cranial injuries do not show any alarming degree of increase in intracranial pressure as indicated by lumbar puncture and, more specifically, do not show

a pressure over 200 mm. of water. Those patients who are severely injured and persist in showing an elevated spinal fluid pressure would best be subjected to multiple trephine openings and, in the event that no clot is found, a generous decompression should be made if the brain appears to be under serious pressure. The indications for a decompression are extremely rare, however.

The importance of a thorough neurologic examination of the patient on admission and at frequent intervals thereafter cannot be too forcefully emphasized. The appearance under observation of focal neurologic signs and particularly a state of progressive loss of consciousness are a clear indication by and large for surgical intervention. On the other hand, an injured person with a cerebral laceration will ordinarily show focal neurologic signs on the first examination, and there will be a tendency in the direction of improvement in the neurologic picture and particularly a progressive return to consciousness. The majority of patients with cortical lacerations or contusions will show bloody spinal fluid but with no alarming elevation of pressure. Patients with minor degrees of subarachnoid bleeding may not present a clinical picture which differs in essentials from those with a moderate degree of concussion. The diagnosis must be made by a lumbar puncture performed within a few days after the injury. Those persons with more marked subarachnoid bleeding show some degree of nuchal rigidity, confusion, dizziness, restlessness, irritability, drowsiness, headache, vomiting and a slight elevation of temperature. These patients are unquestionably made more comfortable by lumbar punctures done usually at twenty-four hour intervals but again at shorter or longer intervals, depending on the amount of blood and the elevation of the spinal fluid pressure.

MANAGEMENT OF DEPRESSED FRACTURES

It is almost axiomatic that every scalp laceration should be carefully examined under sterile precautions before being sutured, to establish the presence or absence of an underlying fracture. This will not be possible, of course, unless the bone is exposed. Further information concerning the nature of the fracture, if

TABLE 2.—*Mortality**

	Totals		Mortality, %	
	Neuro- surgical	Rest of Hospital	Neuro- surgical	Rest of Hospital
Concussion.....	0	496	....	0.8
Edema, contusion and laceration.....	376	339	10.9	28.0
Rupture of middle meningeal artery...	10	7	70.0	85.0
Subdural hematoma.....	30	33	26.6	90.6
Compound fracture.....	60	47	31.6	59.6
Depressed fracture.....	29	23	3.4	39.1

* Modified from Munro.

it appears grossly to be depressed, should be obtained by x-ray examination before the wound is closed. A simple linear fracture should be no matter of concern and no indication for immediate x-ray examination. A compound depressed fracture must be treated promptly in the manner and for the reasons already discussed. Only occasionally will a patient be in such a degree of shock from gross tearing of the brain as to be unfit for any immediate major surgery. If the fracture is not compound, operative treatment is usually not indicated unless the size of the depressed fragment is sufficient to reduce materially the size of the intracranial cavity. The popular opinion that depressed

fragments, per se, may result in epilepsy is not substantiated by recent knowledge of the pathologic response of the brain to trauma. Late epileptic manifestations are due to the formation of a cerebral cicatrix rather than to any irritative effects of a depressed fragment. Glaser and Shafer⁵ have recently reported

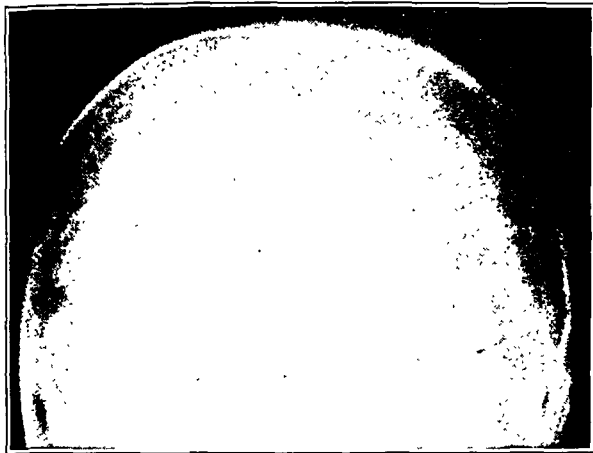


Fig. 1 (case 1).—Depressed fracture in left occipitoparietal region.

an eight year follow-up of ninety-one patients with depressed fractures. Their conclusion was that early elevation of the depression did not prevent the development of late sequelae in this series. This corresponds to the experimental observations of Naffziger and Glaser.⁶ The experimental data do not support the usual conception that the continued pressure of a rounded depression on the brain will cause further damage and consequently that elevation should be carried out at any time with or without symptoms. Elevation should be confined to fractures of a fragmented and spiculated nature wherein the dura has been lacerated and the brain traumatized. It is difficult to be specific as to the type of case which does not require elevation because frequently even after careful radiologic examination one is unable to state with any degree of certainty whether the dura and cortex have been grossly injured. Each case is a problem unto itself and requires the judgment and attention of a neurosurgeon. The primary objective in the operative treatment is the débridement of devitalized tissues and the repair of the cranial deformity. If infection is not present, the fragments of bone may be replaced. A delay of more than six hours (approximately) enhances materially the chances of infection. The average traumatic wound, if promptly irrigated and debrided in a thorough fashion, will rarely become infected and requires no drainage. When conditions make it necessary to postpone indefinitely any major surgery, the wound should be carefully cleaned and sutured so as to insure a sterile field for the secondary operation.

USE OF HYPERTONIC SOLUTIONS AND LUMBAR PUNCTURE

One will occasionally see patients so severely injured that death occurs within a few hours or at least within twenty-four hours of the accident. For the most part, these patients show some abnormality

of respiration and more particularly irregularities of rhythm. They ordinarily show signs of marked cerebral irritation and one hesitates in doing anything but the most simple procedures because almost every stimulus seems to throw the injured into a paroxysm of hyperventilation, extensor spasm and extreme restlessness. In any event there is little if anything that can be done to save this type of patient. Some of them, however, in spite of the extremely ominous picture which they present, survive the immediate critical period and gradually return to consciousness after days or weeks. The prolonged period of unconsciousness is due to widespread cerebral lesions in the nature of multiple lacerations and contusions, or petechial hemorrhages or extensive hemorrhage into the brain stem from the vein of Galen, with associated edema and cell damage. It is this group in which the method of repeated lumbar punctures and conservative use of hypertonic solutions has its best clinical application. These measures should not be carried beyond the stage at which increased pressure is no longer demonstrable by lumbar puncture, however. Actually a patient can be brought to a critical state by overenthusiastic dehydration, and a remarkable transformation will occur with administration of generous amounts of fluid, in a manner similar to the effect of dextrose in insulin shock. Afebrile patients should receive about 1,500 cc. of fluid in twenty-four hours, and those with fever proportionately larger amounts.

I have already mentioned that a very large proportion of cases of craniocerebral injury fall into the classi-

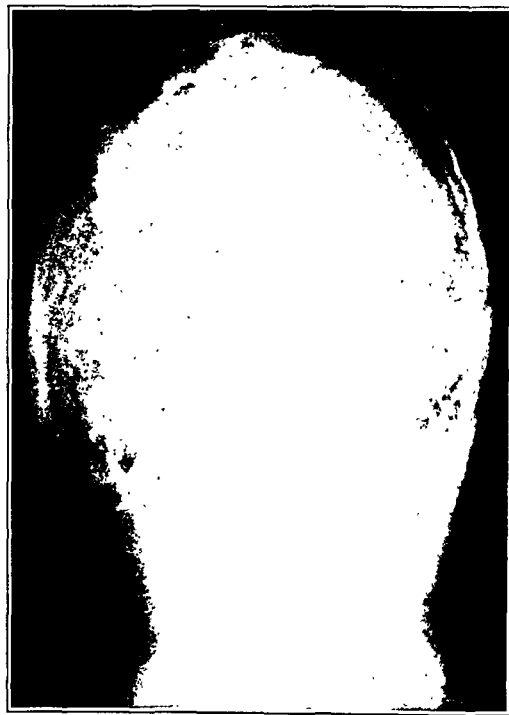


Fig. 2 (case 2).—Depressed fracture in right occipital region.

fication of simple uncomplicated concussion and that roentgenograms of the skull need not be taken during the first week. According to Glaser and Blaine,⁷ x-ray films of the skull taken from six months after injury in children to nine months after injury in adults are

5. Glaser, M. A., and Shafer, F. P.: Depressed Skull Fractures; Value of Surgery; Sequelae; An Eight Year Follow-Up Study of Ninety-One Patients, *J. A. M. A.* **113**: 2111-2116 (Dec. 9) 1939.

6. Naffziger, H. C., and Glaser, M. A.: An Experimental Study of the Effects of Depressed Fractures of the Skull, *Surg., Gynec. & Obst.* **51**: 17-30 (July) 1930.

7. Glaser, M. A., and Blaine, E. S.: Duration of Fractures and Operative Defects of the Skull as Revealed by Roentgenograms; Follow-Up Study of One Hundred Patients, *J. A. M. A.* **107**: 21-24 (July 4) 1936.

as valuable as those taken immediately after injury in determining the presence or absence of fracture. The indications for immediate roentgenograms are few and in this regard I have mentioned compound fractures and fractures through the sinuses as examples. In cases of serious injury in which the diagnosis is some-

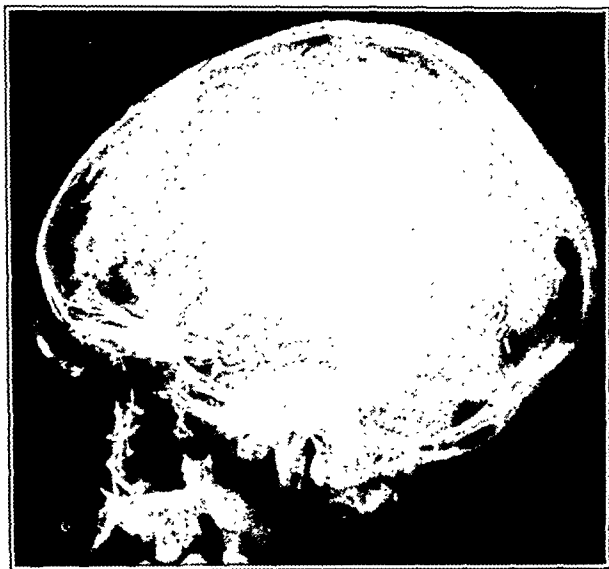


Fig. 3 (case 2).—Excised block of bone in place after depressed portion at its center had been remodeled. The small radiopaque bodies are silver clips.

what in doubt, roentgenograms of the skull may be helpful if a shift of the pineal gland can be visualized. The danger of subjecting a patient with a severe head injury to the moving and gyrations necessary for obtaining a series of roentgenograms is obvious. A simple linear fracture of the vault carries no serious import in spite of the aura which has been spun about it by lay persons and in the courtroom. Basilar fractures may be more significant should the sinuses or the cranial nerves be involved.

Lumbar puncture affords a direct approach to the withdrawal of fluid from the cranial cavity. At the same time it is an important diagnostic measure when subarachnoid hemorrhage is suspected. Recent experimental observations suggest that the removal of spinal fluid may minimize certain sequelae such as headache and dizziness. A word of caution is advisable regarding the indiscriminate use of this therapeutic measure. The absence of danger is not unanimously accepted, and in the light of our present knowledge it appears wiser to refrain, if possible, from the use of a lumbar puncture during the first twenty-four hour period. This is based on the assumption that intracranial hemorrhage might be accelerated by the rapid removal of cerebrospinal fluid. It is often not necessary to tap patients with a cerebrospinal fluid leak because the drainage automatically relieves any pressure which might be present, although this is not always the case. There is some danger in reducing the pressure to a point at which there is a reversal of the flow at the site of the fracture and a natural tendency toward introduction of infection into the subarachnoid space. Meningitis of traumatic origin is subject to the same methods of therapy as meningitis of the more common types. The spinal fluid pressure may at times be misleading in the evaluation of the state of the patient. I have noted in several instances that on successive daily punctures the spinal fluid tended gradually to

return to normal, whereas the patient was actually becoming more drowsy. Exploration in these cases revealed a subdural hematoma with decidedly increased intracranial pressure. The discrepancy is probably explained by either an incisural or a foraminal block.

In general it is suggested that sedatives be avoided because of the natural tendency to obscure the picture of progressive somnolence which is so important from the standpoint of diagnosis. Extreme restlessness may precede or accompany a state of progressive stupor due to increasing intracranial pressure, and the tendency to complicate the picture with sedation may make the differentiation difficult. The tendency in particular to sedate intoxicated patients is fraught with grave danger, since one already has to decide whether the hyperactivity and/or somnolence is primarily an alcoholic or a pressure effect. Body restraints usually increase the agitation. The restlessness is not infrequently due to a simple matter such as an overdistended bladder. The bladder can often be emptied by manual expression and a possible infection due to catheterization may be avoided. Restlessness is a rather common accompaniment to subarachnoid hemorrhage and can be controlled in part by repeated lumbar punctures. Morphine in particular is contraindicated because of its depressing effect on the vital centers. Headache can usually be controlled by acetylsalicylic acid. It has been my practice, with patients who are conscious on admission or regain consciousness shortly after, to arouse them for a vocal response at hourly intervals for at least twenty-four hours. In this way it renders it unlikely that a patient will lapse into unconsciousness through the night without this transition having been discovered. This is of particular importance with children and patients who are not hospitalized. A few patients will show considerable elevation of temperature and this is best treated with alcohol sponges, with care being taken not to cool the surface of the body too rapidly. In some instances ice water enemas are more effective. The vital signs are recorded at half hourly intervals for from twenty-four to forty-eight hours in all cases and longer in the more critically injured.

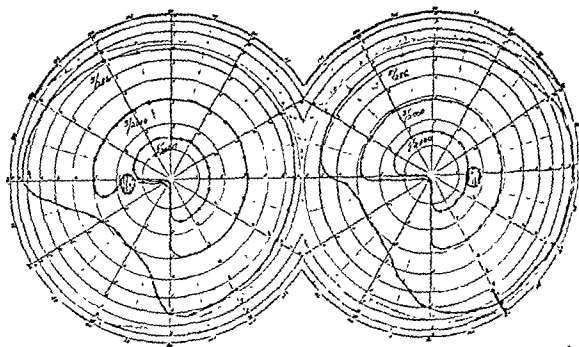


Fig. 4 (case 2).—Visual fields taken fourteen months after the accident.

Patients with head injuries for the most part are not in any notable degree of shock unless there has been excessive loss of blood from a surface laceration or some crushing injury to the bones, or some internal injury. Attention is called to the distinction between so-called primary shock and secondary shock. The former is usually regarded as consisting of a relative lowering of blood volume through vasodilatation, the latter of an absolute lowering of blood volume through

loss of blood or plasma. There is some evidence that trauma to the brain produces a type of shock presenting more nearly the characteristics of primary shock. The state of primary shock is ordinarily very short lived and need be of no special concern. Removal of the cause, replacement of the lost blood volume, rest and heat are the accepted treatment for secondary shock.

It should be stated that mortality figures have been published in several large series of cases and that there is but little statistical discrepancy between them, although the therapy varied in all three. Fay reported 556 cases with a gross mortality rate of 18.2 per cent, Munro 505 personal cases with a mortality of 15.6 per cent and Coleman 453 cases with an 18.5 per cent mortality. Fay is the proponent of rigid dehydration, Munro employs modified dehydration, and Coleman shows a distinct inclination away from both lumbar drainage and dehydration. The objections in general to the use of hypertonic solutions are twofold: the danger of increasing the intracranial bleeding and

sure. More often, however, the changes in vital signs are more subtle, and it is well to be on the lookout for additional criteria in the diagnosis of intracranial bleeding.

REPORT OF ILLUSTRATIVE CASES

CASE 1.—R. C., a white youth aged 15 years, was involved in an automobile accident at the age of 5 years which resulted in a short period of unconsciousness. A laceration was noted in

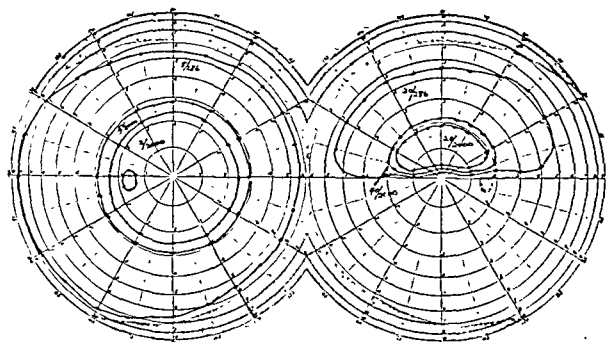


Fig. 6 (case 3).—Visual fields taken one year after the accident.

the left occipitoparietal region, which was sutured but no roentgenograms were taken.

In his fourteenth year, nine years after the accident, he had four seizures described as tonic in nature and a final episode which consisted solely of a transient numb sensation on the left side of the body beginning in the leg. The neurologic examination at this time was negative. X-ray examination of the skull showed a small depressed fracture (fig. 1) in the left occipital region. An electro-encephalogram showed seizure discharges from the right occipitoparietal area.

This case illustrates the fallacy of the common conception that a depressed fracture is of itself a constant source of posttraumatic epilepsy and should therefore be elevated. The electro-encephalogram confirmed the clinical opinion that the epileptogenic focus was on the opposite side of the brain from the fracture and that the depression was of no importance. This is to



Fig. 5 (case 3).—Multiple fractures of the skull with extension through the cribriform plate and into the frontal sinus.

the almost inevitable secondary rise in spinal fluid pressure which follows the use of hypertonic dextrose. There is some evidence that hypertonic sucrose injection is usually not followed by a secondary rise in pressure. It is also stated that the prolonged administration of hypertonic solutions may have a deleterious effect on the kidneys.

Before the presentation of case histories, emphasis should again be laid on the fact that the classic signs of increasing intracranial pressure, and especially a notable rise in blood pressure with a concomitant increase in pulse pressure, may be a relatively late development in the clinical picture. In fact, if one waits for a striking rise in blood pressure the patient may not survive even if a blood clot is successfully removed. In my experience a tendency to extreme restlessness and increasing stupor has been an earlier and more reliable indicator of increasing intracranial pressure than the vital signs. There are occasional patients who show no striking change in vital signs at all, in spite of there being considerable compression present from a blood clot. It is of course important to tabulate the vital signs and one occasionally sees unequivocal indications of increasing intracranial pres-

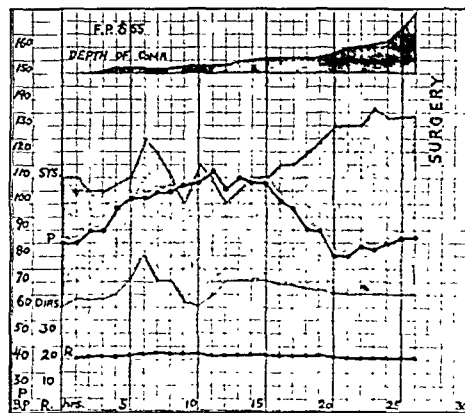


Fig. 7 (case 5).—Note the moderate elevation of the blood pressure in a case in which there are two clots, one subdural, the other extradural. A change in the state of consciousness preceded the alteration in the blood pressure by about fourteen hours.

be explained on the basis of a contrecoup injury in the right occipitoparietal cortex.

CASE 2.—R. D., a white man aged 20, was admitted to the hospital on Oct. 25, 1938, about fifteen minutes after having been struck by an automobile. He had been dazed but was not unconscious. There was a laceration of the scalp about 6 cm. long in the right occipital region. The edges of the wound were separated under sterile precautions and some clot was

washed out. When this was being done a small piece of brain tissue measuring a few millimeters floated up. Gross examination of the visual fields revealed a complete left homonymous hemianopia. X-ray examination (fig. 2) showed a depressed fracture at the site of the scalp laceration.

The patient was taken to the operating room. Under local anesthesia the wound was explored and a block of bone removed

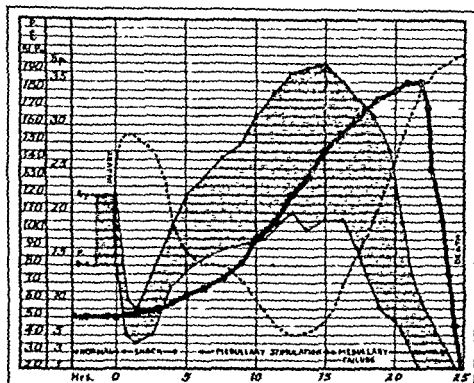


Fig. 8.—Course of events following a rise in intracranial pressure according to a conception widely employed and taught in surgical practice. After recovery from the initial shock the intracranial pressure rises and there is a *pari passu* rise in the blood pressure and fall in pulse rate until medullary failure ensues. From this point on the blood pressure falls, the pulse races and shock becomes evident, leading almost inevitably to death. (After Browder, Jefferson, and Meyers, Russell: Behavior of the Systemic Blood Pressure, Pulse Rate and Spinal Fluid Pressure, Arch. Surg. 36: 1 [Jan.] 1938.)

with the depressed portion at its center. The macerated portion of the cerebral cortex was debrided, as was also the dura, which was then closed. The bone flap was sterilized, remolded and replaced into the skull defect (fig. 3).

The importance of careful inspection of scalp lacerations is emphasized by this case. The clean removal of macerated cerebral tissue and dura lessen the chances for the later development of a meningocerebral cicatrix. Roentgenograms taken fifteen months after the injury showed considerable absorption of bone in the block which had been excised and replaced (fig. 3). In spite of the x-ray appearances, the operative area was just as firm as the rest of the skull. Visual fields, (fig. 4) taken at the same time showed a residual left homonymous inferior quadrantic defect.

CASE 3.—J. R., a white man aged 44, was admitted to the Milford Hospital on May 31, 1936, shortly after having been injured in a two car collision. He remained in coma for twelve hours. There was a compound fracture (fig. 5) in the right frontal region extending into the frontal sinus, orbit and cribriform plate of the ethmoid. No evidence of rhinorrhea was noted, although there had been some bleeding from the nose. He was discharged after five weeks.

After three weeks at home he was admitted to the New Haven Hospital because of a sudden elevation of temperature associated with severe headache. Drainage of spinal fluid from the right nostril was noted, and the presence of a meningitis was confirmed, which lasted for about ten weeks. He ultimately made a complete recovery except for anosmia and an almost complete loss of vision (fig. 6) on the right. The rhinorrhea stopped with the subsidence of the meningeal infection and has not recurred in the three intervening years.

A meningeal infection may follow a basilar fracture through the paranasal sinuses as soon as thirty-six hours after the injury and indeed be so fulminating as to be fatal in spite of modern chemotherapy. It should be noted that the cerebrospinal rhinorrhea did not appear until eight weeks after the injury. There is a feeling generally among neurosurgeons that a cerebrospinal rhinorrhea requires a prompt closure of the rent in the dura, in spite of the fact that many of them tend to

stop spontaneously, because there is the constant threat of a meningeal infection.

CASE 4.—H. O., a white man aged 39, was admitted to the New Haven Hospital on Feb. 26, 1939, shortly after being injured in an automobile accident. He was semiconscious on admission, quite noisy and agitated. There was some weakness of the right side of the face and the right arm. In the next few days there seemed to be gradual improvement, and it became apparent that a definite aphasia was present, of a motor type. The initial spinal puncture showed a bloody fluid under increased pressure, but by the eighteenth day the fluid was clear and under normal pressure. In the meantime, however, a low grade papilledema had appeared and roentgenograms of the skull taken at this time showed a shift of the pineal gland to the right, measuring 3 mm. The steady but slow improvement in his speech and mental condition seemed at odds with the development of papilledema and a pineal shift. The diagnosis rested between a laceration in the left frontotemporal region or a subdural clot. Consequently trephine holes were made in the left frontal, temporal and parietal regions on the left, but no blood clot was found. Within six weeks of the time of the accident there had been a complete restitution of function and the patient has remained well.

This case illustrates the contrast in the clinical picture between a cortical laceration and a subdural clot. With the former, one usually finds abnormal neurologic signs on the first examination, unless the lesion is in a silent area, followed by a slow steady improvement, especially in the mental state. The pineal shift and papilledema tended to be misleading. The exploratory operation was undertaken in spite of the apparent improvement in order to make absolutely sure that the speech area was not being subjected to local pressure.

CASE 5.—F. P., a white man aged 55, was struck by a truck on July 20, 1939, and was immediately rendered unconscious. He was semiconscious on arrival in the emergency room about one hour after the accident. Neurologic examination at this time showed no abnormal signs. During the first twenty-four hours there was some improvement in that he seemed aware of his surroundings and took nourishment, but there was no attempt to speak. On the second day he became increasingly drowsy, the right pupil seemed slightly larger than the left, and the pulse and respirations were assuming a slower rate. A spinal puncture showed a bloody fluid under a pressure of

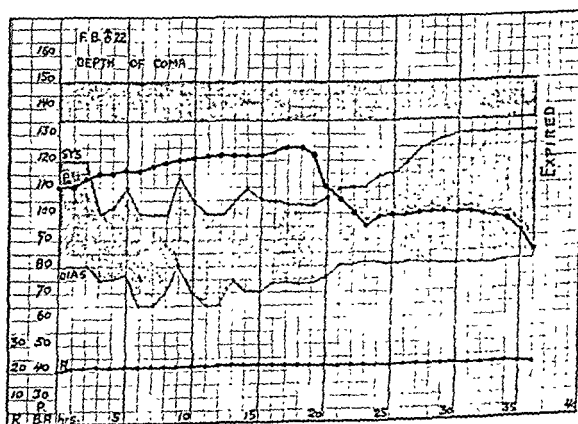


Fig. 9 (case 6).—Vital signs during the thirty-six hours prior to the patient's death. During the first four days after the injury the vital signs maintained a constant level. On the fifth day, about eighteen hours before the patient died, there occurred a moderate elevation of blood pressure and slowing of the pulse. The patient was in deep coma during the entire illness. At autopsy a large subdural clot was found.

165 mm. of water. His blood pressure gradually rose from a level of about 120 systolic, 70 diastolic to 135 systolic, 60 diastolic. He was taken to the operating room, where a trephine opening was first made in the left temporal region because of the absence of spontaneous speech in the lucid interval (first twenty-four hours). When the dura was opened

a clot was encountered and a large quantity of clotted and unclotted blood was evacuated. A trephine hole was then made in the right temporal region and on opening the dura a small amount of thin yellow fluid escaped. The burr hole was then enlarged and toward the upper margin of the exposure the edge of an extradural clot was seen which proved to be of considerable size. This clot was also evacuated. There was rather prompt improvement following the operation.

The progressive tendency toward a stuporous state and the lack of return of spontaneous speech were in sharp contrast to the events in case 4, in which a diagnosis of cortical laceration was made. The left side was explored first because of the aphasia. The right side was also opened because the right pupil tended to be somewhat larger than the left and because of the fact that bilateral subdural hematomas are fairly common. The combination of a large subdural clot on one side and an extensive extradural clot on the other is rather unusual. Attention is called to the lack of striking changes in the vital signs (fig. 7) and to the slight elevation in spinal fluid pressure in spite of the amount of clot found. Figure 8 illustrates the course of events in a hypothetical case following a rapid rise in intracranial pressure according to a conception widely employed and taught. This alarming degree of alteration in the vital signs is not often seen, however, and one must be prepared to act on more subtle changes in the vital signs plus a tendency toward increasing somnolence.

CASE 6.—F B., a white man aged 22, was brought into the hospital on June 17, 1934, about a half hour after having been struck by an automobile and instantly rendered unconscious. He was in deep coma on admission and there was obvious respiratory distress. The pupils were fixed, the right being semidilated and the left fully dilated. There developed in the next twenty-four hours a flaccid weakness of the right arm and leg. On the third day the right pupil had returned to its normal size but the left pupil was still widely dilated and the eyeball was practically fixed as the result of oculomotor paralysis. The spinal fluid on the fourth day was bloody and under a pressure of 130 mm. of water, a drop of 120 points from the pressure reading taken forty-eight hours previously. His temperature ranged between 101 and 104, his respirations were irregular and the pulse varied between 100 and 140. The blood pressure remained between 100 systolic, 70 diastolic and 130 systolic, 80 diastolic. There was a marked degree of restlessness associated with a constant state of unconsciousness. A left lower lobe pneumonia was noted on the fourth day, and on the following day he died. At postmortem a large subdural clot was found on the left side. In addition there were lacerations of the basilar surface of the left frontal and temporal lobes and multiple subcortical petechial hemorrhages.

There were multiple brain injuries in this case, and the subdural hematoma was only one factor in the production of the clinical picture depicted. It is in just such an instance, in which the classic signs and symptoms of subdural hematoma are lacking because of additional injuries, that multiple exploratory trephine openings are indicated. Certainly if the subdural clot had been found and removed, the chances for survival would have been better. Attention is again called to the fact that the vital signs were fairly constant and within normal limits for the first four days, and there then followed in the few hours preceding the patient's death a moderate rise in blood pressure (fig. 9). A third nerve (oculomotor) paralysis which follows a head injury may be due either to a contusion or laceration of the nerve or, as in this case, to compression from a blood clot.

New Haven Hospital.

CRANIAL AND INTRACRANIAL COMPLICATIONS OF ACUTE FRONTAL SINUSITIS

PAUL C. BUCY, M.D.

CHICAGO
AND

W. TRACY HAVERFIELD, M.D.

JACKSONVILLE, FLA.

The most common complications of acute frontal sinusitis, particularly that which follows swimming, are abscess of the frontal lobe and osteomyelitis of the frontal bone.¹ Within recent years the rhinologists and neurosurgeons have adopted more or less successful methods of dealing with these complications. Nevertheless the problems presented by these complications can by no means be regarded as settled. The most crying needs are for the adoption, if possible, of prophylactic measures that will limit the infection to the sinus and prevent the development of these and similar complications, and for the dissemination of knowledge

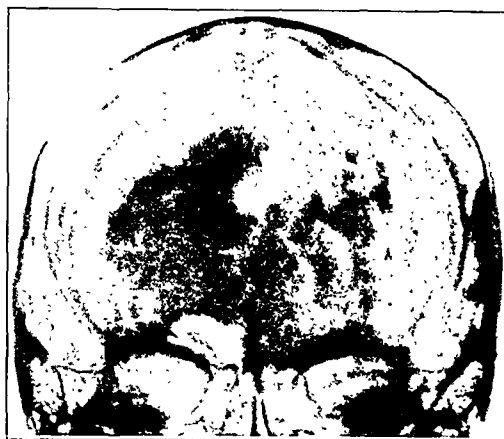


Fig. 1 (case 1, July 2, 1939).—Extensive osteomyelitis involving the entire right half of the frontal bone.

regarding this condition beyond the confines of these two most interested groups of specialists to the entire medical profession.

As a basis for this discussion we have chosen three cases of fulminating frontal sinusitis complicated by cranial or intracranial infections, and one case of osteomyelitis of the frontal bone and intracerebral abscess of different origin. Typically, all three cases of sinusitis occurred in adolescents and all followed swimming.

REPORT OF CASES

CASE 1.—R. C., 16 year old boy; swimming April 17, 1939; almost immediate development of right frontal headache, edema of right side of forehead and swelling of eyelids; April 21 stiff neck; May 16 left-sided convulsions; diplopia; headache and vomiting; July 1 comatose; admitted July 2; right frontal sinusitis, osteomyelitis of frontal bone, abscess right frontal lobe; repeated operations; recovery.

R. C., a boy aged 16 years, was first admitted to the University of Chicago Clinics Sunday, July 2, 1939, at 11:30 a. m. in a stuporous condition. According to his mother, he went

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1. We are well aware that there are other less common complications of frontal sinusitis, such as subdural abscess, sinus thrombosis and meningitis, and also that similar complications may arise from chronic frontal sinusitis particularly following surgical intervention. However, only confusion and misunderstanding can arise from a discussion of the complications of chronic and acute sinusitis together in spite of their similarity, and we have chosen to refer only to the latter.

swimming April 17, 1939. The following day he complained of a right frontal headache; within the next twenty-four hours the pain became very severe, and a swelling appeared in the center of the forehead which soon spread to both upper eyelids and to the right half of the forehead. Local hot applications and some "pills" were prescribed but the condition grew steadily



Fig. 2 (case 1, July 2, 1939).—Lateral view. Osteomyelitis extends back to the coronal suture.

worse. By April 21 he was also complaining of stiffness of his neck. On the 26th he was admitted to another hospital, where he remained until May 8. During this period an incision was made in the right upper eyelid and an amber fluid drained. Following this incision the swelling of the left upper eyelid disappeared but the right eye remained closed.

May 16, approximately one month after the onset, he began to have localized clonic convulsive seizures involving the left side of the face and left arm. Diplopia was present whenever the right eye was held open, and the headache and stiffness of the neck continued. June 5 roentgenograms taken by the family physician were said to have shown osteomyelitis of the right frontal bone. June 20 he suddenly lost consciousness and subsequently vomited. July 1 he became drowsy and at noon lapsed



Fig. 3 (case 1, July 2, 1939).—Taken after aspiration of the abscess and the introduction of 5 cc. of colloidal thorium dioxide. The abscess is flattened after evacuation but is obviously not in contact with the dura mater or skull at any point. The opening in the skull through which the pus was removed is seen in the posterosuperior frontal region.

into a deep "sleep" from which he could not be roused. He was admitted to this hospital the following day in a semicomatose state.

Examination.—The patient was poorly nourished and emaciated and in a semicomatose condition. The temperature was

100 F. (rectally), pulse rate 72 and respiratory rate 24 per minute. The blood pressure was 118 systolic, 70 diastolic. On palpation the entire right half of the frontal bone was found to be roughened and there were small fluctuant swellings beneath the scalp. There was ptosis of the right upper eyelid. The pupils were equal but only the left reacted to light. There was bilateral papilledema with many hemorrhages about the disks. There was definite left facial weakness and there seemed to be left hemiparesis. There was some atrophy of the small muscles of the left hand. The tendon reflexes were all present possibly slightly more active on the right side. Babinski's sign was present on the left.

He had leukocytosis with a count of 13,600. The blood contained 12 Gm. of hemoglobin and 4,620,000 red blood cells per cubic millimeter.

Roentgenograms of the skull revealed massive osteomyelitis of the entire right half of the frontal bone from the supra-orbital ridge to the coronal suture, which extended a slight distance across the midline to the left side (figs. 1 and 2).

It seemed obvious that the boy was suffering from an abscess of the right frontal lobe of the brain and extensive osteomyelitis of the right frontal bone, which had developed from a right frontal sinusitis.

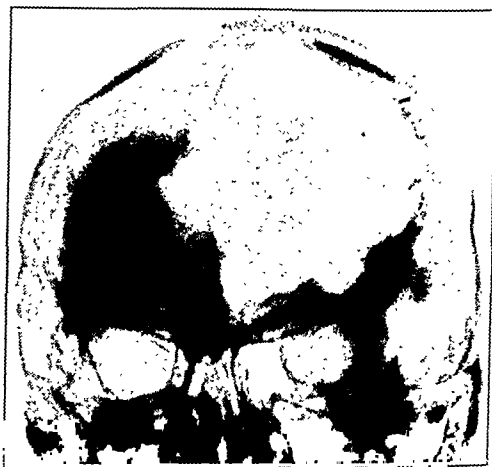


Fig. 4 (case 1).—The entire right half of the frontal bone including the supra-orbital ridge and a small amount of bone to the left of the midline has been removed.

First Operation.—Relief from increased intracranial pressure being imperative, he was taken to the operating room. A short incision was made at approximately the level of the coronal suture on the right side and a trephine opening made in the underlying bone was enlarged to 2.5 by 4 cm. On incision the dura mater was found to be densely adherent to the underlying cerebral cortex. Immediately beneath the surface of the cortex was a superficial abscess from which 30 cc. of pus was evacuated. It was obvious that there was additional pathologic change. A blunt needle was inserted and at a distance of 4 cm. it encountered a second abscess from which 45 cc. of thin yellowish hemorrhagic pus was evacuated. Five cc. of colloidal thorium dioxide was injected into the abscess cavity in order that its size and position might be followed with x-rays (fig. 3). The wound was closed. Cultures of the pus all revealed hemolytic *Staphylococcus aureus*.

Almost immediately after the operation the patient roused from his stupor, responded and became quite restless. On examination he appeared to be totally blind.

Second Operation.—By July 6 his condition had improved so much that the necessary surgical treatment was undertaken. The old incision was extended medially and laterally within the hair line, and the scalp was reflected downward off the right frontal bone. There were much pus and many small bony sequestrums beneath the galea and the fragmented periosteum. The entire right half of the frontal bone was eroded, fenestrated and extensively infected. All of this involved bone, to the left beyond the midline, back to the coronal suture and laterally

beneath the temporal muscle, was removed with a rongeur (fig. 4). A large circular incision was made in the dura mater overlying the abscess to allow it to herniate out of the brain.

The patient soon became normally alert and cooperative. The left hemiparesis disappeared. July 13 70 cc. of pus was aspirated from the abscess and an additional 5 cc. of colloidal thorium dioxide was injected into it. The position of the abscess was then followed by daily roentgenograms. It was seen to shift laterally gradually and July 15 a third operation was undertaken.

Third Operation.—The old incision was reopened and the scalp was reflected forward. The encapsulated abscess projected about 2 cm. beyond the skull and was covered by a thin layer of necrotic cerebral tissue. It seemed possible to enucleate this abscess. However, the upper part of the abscess was unex-



Fig. 5 (case 2).—Four months after extirpation of osteomyelitis of right half of frontal bone.

pectedly thin and ruptured, releasing a large quantity of pus. The abscess cavity was then drained and the wound closed about the drains.

We were delighted to discover on the following day that the boy had some vision in his left eye. His condition and the vision gradually improved. He was discharged from the hospital September 5, at which time he was able to read ordinary newspaper print with his left eye although vision was largely limited to the nasal half of the field and he could only perceive light with the right eye. Ocular movements were full in all directions. Both pupils reacted to light.

He has since been followed in the outpatient department. His general condition has steadily improved although there has been little, if any, change in his vision since he was discharged from the hospital, and there has been no relapse except that two small sequestrums were removed from the region of the supra-orbital ridge on November 11. He is now anxious to return to school.

There is a considerable deformity of the right frontal region, which will eventually be corrected.

The disease in this instance was by far the most severe. There can be no question but that its severity was very materially increased by a marked delay in the institution of appropriate treatment, a delay of over two months after the first manifestations of intracranial



Fig. 6 (case 2, Sept. 8, 1939).—Osteomyelitis has invaded the right half of the frontal bone along the two main diploic venous channels. One extends directly upward from the sinus, the other extends upward from the malar process and then curves medially.

involvement (a stiff neck), of over six weeks after the first evidence of cerebral involvement (the convulsions) and of almost a month after extensive osteomyelitis of the skull was demonstrated with the x-rays.

This case presents the typical clinical course of those in which an intracerebral abscess develops from the ear or from the paranasal sinuses. The intracranial infection is heralded by the general manifestations of increasing infection. The temperature rises, there is an increas-



Fig. 7 (case 2).—Practically all of the right half of the frontal bone has been removed.

ing leukocytosis, the patient is obviously sicker—"toxic" is the word commonly applied. He may have a chill and almost invariably there is rigidity of the neck. This sudden exacerbation is usually of short duration, often only from one to three days. With the subsequent improvement the patient, his family and the doctor all heave an unjustified sigh of relief. After a variable

period of days or weeks, depending on the rapidity of the growth of the abscess, signs of cerebral or cerebellar involvement, as the case may be, appear. At this second stage the usual evidences of infection, fever, tachycardia and leukocytosis, are commonly either minimal or

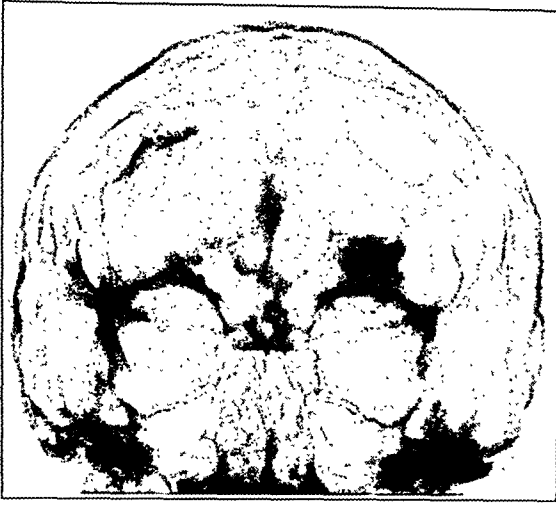


Fig. 8 (case 3).—The trephine opening is seen in the left frontal region. The abscess, now collapsed, is shown by the colloidal thorium dioxide which has been injected into it. There is no osteomyelitis present.

absent. Either simultaneously with or shortly after the appearance of this second stage evidences of increasing intracranial tension, headache, vomiting and choking of the optic disks, develop. If adequate treatment directed

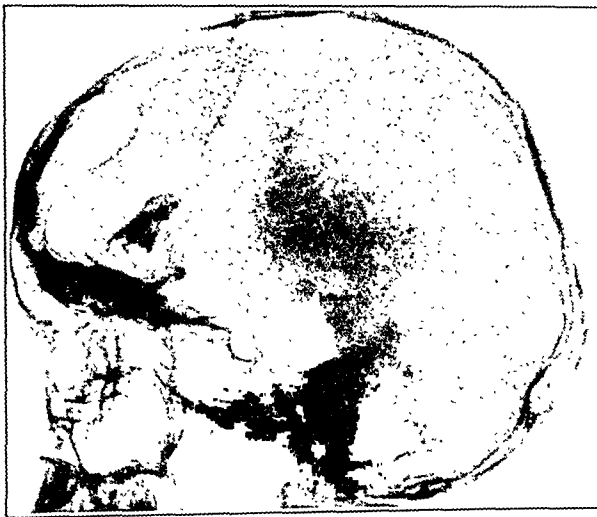


Fig. 9 (case 3).—Lateral view showing the location of abscess.

toward the abscess itself has not already been instituted it now becomes imperative if the more serious sequelae of blindness, stupor, coma and death are to be avoided.

This course of events is so constant and so significant as to diagnosis and treatment that it deserves to be far better known. It may not always be possible to prevent the development of abscesses of the brain, but their presence can usually be recognized and appropriate treatment instituted early enough to prevent death or blindness if one is merely familiar with this train of events.

The second case of our series presents a surprising similarity to the first except that, fortunately, the extending infection was confined to the frontal bone.

CASE 2.—F. D., 12 year old girl; dived in water feet first Aug. 6, 1939; immediate pain at root of nose; August 13 swelling right eye; August 26 roentgenograms revealed osteomyelitis; admitted September 8; immediate radical excision of osteomyelitis; rapid recovery.

F. D., a girl aged 12 years, was referred to the University of Chicago Clinics by Dr. M. M. Hipskind of Chicago.

Aug. 6, 1939, she had gone swimming. She dived in feet first and immediately thereafter complained to her father of pain at the root of the nose. August 8 she complained of nasal obstruction. On the 10th she was sleepy and had a low grade fever. On the 12th she complained of pain over the right frontal sinus and on the 13th a swelling appeared at the inner angle of the right eye and grew progressively worse until the eye was swollen shut. The oral temperature was 101.6 F. The following day both eyes were swollen shut. Roentgenograms taken August 18 revealed some clouding of all of the paranasal



Fig. 10.—Normal skull of a boy of 10 years. The frontal diploic vein is most developed on the left side, while the anterior temporal veins are well seen on both sides. Compare with the course of the osteomyelitis in case 2, figure 5.

sinuses. Those made August 26 revealed an osteomyelitis of the right supra-orbital ridge, while the films exposed August 29 and September 6 revealed a gradual extension of the osteomyelitic process.

She was admitted to the University of Chicago Clinics September 8. Examination revealed edema of the right frontal region with several elevated fluctuant areas. The right upper eyelid was swollen and inflamed. There was paralysis of the right superior rectus muscle. The optic disks were normal in

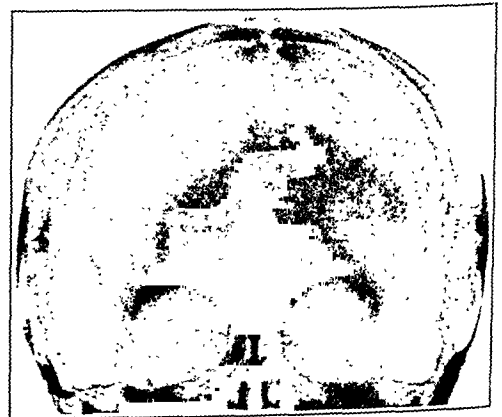


Fig. 11 (case 4).—Area of osteomyelitis along the course of the left anterior temporal diploic vein (to be compared with fig. 10).

appearance. No rigidity of the neck or other abnormal neurologic feature was noted. The temperature was 37.8 C. (100 F.), pulse rate 100 and respiratory rate 24. The blood examination revealed 6,200 leukocytes, 4,550,000 erythrocytes and 90 per cent hemoglobin.

Roentgenograms of the skull revealed two areas of osteomyelitis extending upward into the right frontal bone from the

frontal sinus. One was just lateral to the midline and followed the right frontal diploic vein. The other was higher and farther lateral and followed the anterior temporal diploic vein (fig. 6).

A diagnosis of osteomyelitis of the frontal bone on the right side was made, and the patient was taken to the operating room.

Operation.—September 8 a curved incision was made just back of the hair line, and the scalp was reflected downward off the right frontal bone. There was a small amount of pus and granulation tissue between the scalp and the bone in several places. The bone was roughened and in several places eroded through to the dura mater. Practically all of the right half of the frontal bone, including the walls of the frontal sinus and the supra-orbital ridge and extending back to the coronal suture, was removed before healthy bone was reached (fig. 7). There was a moderate-sized extradural collection of pus and granulation tissue beneath the more medial area of osteomyelitis. Two soft rubber drains were inserted beneath the scalp and the wound was closed.

Postoperative Course.—She made a rapid recovery and was discharged September 25. Except for the removal of a small localized area of infected bone overlooked at the first operation and subsequently demonstrated by x-rays she has remained in perfect health. There is only a very slight deformity in the right frontal region (fig. 5). Roentgenograms of the skull made Jan. 2, 1940, revealed definite evidence of beginning of regeneration of bone at the site of the defect. This regenerated bone could also be palpated. To date, June 17, 1940, this child has remained in perfect health and regeneration of the bone is continuing rapidly.

In contrast with the first case there was far less delay here. However, the avoidance of a severe intracranial infection must be attributed more to good fortune than to prompt action; for the month that elapsed between the onset of the sinus infection early in August and the removal of the infected bone in September was more than sufficient, as case 1 adequately shows, for the cerebrum to have been invaded.

Whereas acute fulminating sinusitis in the second case was complicated by osteomyelitis of the frontal bone without an associated brain abscess, the third case presents a brain abscess without any osteomyelitis.

CASE 3.—*M. B., 14 year old boy; swimming June 11, 1939; almost immediate severe left frontal headache; subsequent swelling left upper eyelid; continuous headaches; July 4 generalized convulsion; persistent vomiting; September 10 dizziness, diplopia, blurred vision; admitted September 20; right frontal lobe abscess; drained; recovered.*

M. B., a boy aged 14 years, was referred to the University of Chicago Clinics by Dr. Thomas Krause of Rockford, Ill.

June 11, 1939, he went swimming and got some water in his nose. That night a severe headache developed in the left frontal region. The headaches continued and one week later the left upper eyelid became swollen. A diagnosis of frontal sinusitis was made, but on endonasal drainage no pus was obtained. Subsequently the left upper eyelid was incised and there was free drainage for ten days, after which the incision healed spontaneously. The headaches, however, continued, and the pain radiated around the head and down into the neck. July 4 he became unconscious, had a generalized convulsion and later vomited. Subsequently vomiting recurred, gradually increasing in frequency. The headaches gradually shifted to the right frontal region. About September 10 he began to have attacks of dizziness and diplopia and the vision became blurred. At no time did he have more than 1 degree F. of fever.

He first came under the care of Dr. Krause September 17, when he was admitted to the Rockford Hospital. At that time ophthalmoscopic examination revealed severe papilledema bilaterally. On lumbar puncture the spinal fluid pressure was 40 mm. of mercury. The fluid contained 59 cells per cubic millimeter, 55 per cent of which were polymorphonuclear leukocytes and 40 per cent lymphocytes. The blood contained 11,300 white blood cells. He was transferred to the University of Chicago Clinics September 20.

Examination.—The temperature was 37.6 C. (99.7 F.), pulse rate 108, respiratory rate 22 and blood pressure 96 systolic, 56 diastolic. The boy was thin and underdeveloped for his age. The left upper eyelid was slightly swollen and contained a well healed scar. No abnormality of the heart, lungs or abdomen could be detected. There was marked bilateral papilledema with numerous hemorrhages and exudates. The visual fields were full to gross testing. Ocular movements were full. The left pupil was slightly larger than the right and both reacted sluggishly to light. There was a slight left lower facial weakness, most marked on smiling. On phonation the soft palate moved upward and to the right. Muscular strength, coordination and sensation were intact in all four extremities. The tendon reflexes were all active, though slightly more so on the left side. The abdominal reflexes were less active on the left, and Babinski's sign could at times be elicited on the left side. Station and gait were normal but he was more awkward on attempting to hop on the left leg. There was slight rigidity of the neck.

Examination of the blood revealed 10,900 white blood cells, 16 Gm. of hemoglobin and 5,300,000 red blood cells (all values possibly attributable to dehydration). The Wassermann and Kahn tests on the blood were negative. Roentgenograms of the skull revealed no evidence of sinusitis or osteomyelitis, but there was a moderate separation of the sutures of the cranial vault.

Abscess of the right frontal lobe secondary to left frontal sinusitis was diagnosed.

First Operation.—September 21 an incision was made just posterior to the hair line in the right frontal region. A trephine opening was made and enlarged with a rongeur to 3 cm. in diameter. A stellate incision was made in the dura mater, and the subdural space was packed with gauze. A blunt needle encountered a thick-walled abscess at a depth of 3 cm. from which 40 cc. of greenish pus was evacuated. A small quantity of colloidal thorium dioxide was injected in order that we might follow the abscess roentgenographically (figs. 8 and 9).

The patient was subsequently relieved of the headaches and vomiting. The subdural packing was removed in two days.

Second Operation.—September 27 the wound was reopened. The necrotic cerebral tissue overlying the abscess was removed with suction, disclosing the abscess 1 cm. beneath the surface of the cortex. The abscess was incised and evacuated. A firm rubber drain 1 cm. in diameter was inserted, and the remainder of the cavity was packed with gauze.

The patient's condition gradually improved and he was discharged from the hospital in excellent condition November 25.

It is doubtful in this case whether an accurate localizing diagnosis could have been made at an earlier date without the assistance of pneumo-encephalography.² Yet had relief of the increased intracranial pressure been much longer delayed, serious impairment of vision would most certainly have resulted.

Although the frontal lobe abscess is usually found on the same side as the frontal sinusitis; that such is not invariably the case is well shown by the example just presented. A somewhat similar spread of the infection by the cranial and intracranial venous system is also illustrated by case 4, to be presented later.

PATHWAY OF EXTENSION

Case 1 was much too far advanced when we first saw the patient to give any clue as to how the infection had spread from the sinus, but cases 2 and 3 are far more instructive.

It has long been recognized that there are several potential avenues by which the infectious organisms may invade the frontal bone and the intracranial cavity. Direct spread by way of the diploic spaces was recognized early by Turner³ and subsequently by numerous

2. Although practically no observations have been reported relative to the value of electro-encephalography in the localization of cerebral abscesses, it would seem more than likely that this procedure may prove of very great value in the diagnosis of these conditions in which accurate localization is too often difficult.

3. Turner, A. L.: The Operative Treatment of Chronic Suppuration in the Frontal Sinus, *Edinburgh M. J.* 17: 239-257, 1905.

other writers. Spread along the perineural sheaths of the olfactory nerves, surely a rare channel, has been cited by Courville and Rosenwold.⁴ The pathway most commonly indicted is the diploic veins which spread upward from the region of the frontal sinus (Courville and Rosenwold,⁴ Furstenberg,⁵ Mosher,⁶ Mosher and Judd,⁷ Behrens⁸). We agree with these authors that these venous channels are usually responsible and with Courville⁹ that spread of infection from the ears and other areas of the skull is commonly by a similar route.

Spreading upward from the region of the frontal sinus into the frontal bone and to emissary veins which penetrate to the superior longitudinal sinus or its immediate tributaries are two diploic veins, the frontal and the anterior temporal. These are well shown in the roentgenogram of a child's skull in which no infection existed (fig. 10). Although the configuration of these diploic veins varies from case to case they constantly occupy the same general position. The frontal diploic vein passes upward from the region of the frontal sinus a short distance lateral to the midline of the skull. The anterior temporal diploic vein passes upward from the region of the malar process, then curves medially parallel to and a short distance anterior to the coronal suture. How either one or both of these channels act as pathways for the infection is beautifully shown in the roentgenograms from case 2 (fig. 5). There the process has been caught before the infected areas which have developed along these two channels have coalesced, and each is clearly shown.

It seems safe to assume that osteomyelitis develops only when thrombosis occurs and that in some instances infection may pass through these veins into the superior longitudinal sinus and thence, retrograde, into the ipsilateral or contralateral cerebral hemisphere without the venous wall becoming infected. In such a case a brain abscess appears without the development of an intervening osteomyelitis, as in case 3.

In case 4, which also illustrates these points, both the osteomyelitis and an abscess developed. This, like case 3, clearly shows that the abscess may lie in either hemisphere regardless of the side of either the sinusitis or the osteomyelitis. And it further demonstrates that an infection spread by this means from an osteomyelitis of the frontal bone need not necessarily lodge in the usual site, well forward in the frontal lobe, but may involve more posterior parts of the hemisphere.

CASE 4.—M. G., 3 year old girl; July 26, 1936, left subtemporal abscess; Sept. 6, 1936, osteomyelitis, along left anterior temporal diploic vein, excised; September 15 right posterior frontal lobe abscess; drained; recovered.

M. G., a girl aged 3 years, was referred by Dr. Frank Greer, of Chicago, to the University of Chicago Clinics. She was admitted July 29, 1936. Two weeks before admission a swelling had developed in the left temporal fossa, apparently secondary to a sty on the left upper eyelid and a fall in which the region of the left eye was injured. The only other complaints were a low grade fever (not over 102 F.), a temporary left external rectus palsy and irritability.

First Operation.—Examination, including x-ray study of the skull, revealed only a fluctuant swelling in the right temple. This was incised disclosing an abscess beneath the temporal muscle which healed promptly after it was drained. Cultures showed hemolytic *Staphylococcus aureus*.

During the postoperative period it was thought on several occasions that there was slight blurring of the margins and elevation of the optic disks. However, as there were no other abnormalities, as the general condition remained excellent and the disks did not show any progressive changes she was discharged August 26, after rather prolonged observation.

Soon thereafter a small swelling developed beneath the scalp just at the hair line in the left frontal region. She was readmitted September 6. Roentgenograms of the skull revealed an unquestionable area of osteomyelitis in the left frontal bone along the course of the anterior temporal diploic vein (fig. 11). This extended up to the region of the superior sagittal sinus. Physical and neurologic examinations, except for the swelling in the frontal region and the healed temporal scar, revealed nothing abnormal. The optic disks were unchanged.

Second Operation.—September 8 the osteomyelitic area was completely removed. She continued well until September 13, when chickenpox developed.

September 15 she complained of headache and vomited. Examination revealed definite bilateral papilledema and left hemiparesis with increased tendon reflexes and Babinski's sign on the left but no demonstrable sensory changes.

Third Operation.—A diagnosis of a brain abscess in the right posterior frontal region was made. A trephine opening was made in this region September 16, and 30 cc. of pus was aspirated from an abscess which was encountered at a depth of 6 cm. Cultures showed hemolytic *Staphylococcus aureus*.

Subsequently the abscess was aspirated repeatedly but finally had to be drained. After several operations the infection was finally eradicated. Although a moderate hemiparesis persists, she continues well according to information recently received from Dr. Claude C. Coleman, of Richmond, Va., and her father.

This case illustrates with almost diagrammatic clarity the pathway followed by the infection. From the sty on the eyelid it spread, perhaps as the result of trauma, to beneath the left temporal muscle; there it produced an abscess and then invaded an emissary vein and spread to the anterior temporal diploic vein, part of which became thrombosed, giving rise to an area of osteomyelitis just anterior to the coronal suture (fig. 11). After a brief interruption it continued onward into the superior longitudinal sinus, backward to and down one of the rolandic veins, and was deposited in the substance of the opposite (right) cerebral hemisphere; in this nidus it developed into a localized cerebral abscess.

It is obvious from a study of these cases that any procedure aimed at the prevention of a cerebral abscess must not only eradicate the focus of infection but also interrupt the venous channels which form an open and continuous pipeline into the cerebral substance.

PREVENTION

Of all the problems arising from acute frontal sinusitis, that of prevention is at the same time the most pressing, the least adequately understood and the most difficult. It divides itself into two phases: (1) prevention of the sinusitis and (2) treatment of the sinusitis, once it develops, adequate to prevent the appearance of complications.

From our own experience and from a review of the literature we agree with Mosher¹⁰ that "Our worst cases of frontal sinus infection and osteomyelitis have followed swimming." This is due, as Taylor¹¹ has

4. Courville, C. B., and Rosenwold, L. K.: Intracranial Complications of Infections of Nasal Cavities and Accessory Sinuses, Arch. Otolaryng. 27: 692-731 (June) 1938.

5. Furstenberg, A. C.: Osteomyelitis of the Skull: The Osteogenic Process in the Repair of Cranial Defects, Ann. Otol., Rhin. & Laryng. 40: 996-1012 (Dec.) 1931.

6. Mosher, H. P.: Osteomyelitis of the Skull, Tr. Am. Laryng. 59: 123, 1937.

7. Mosher, H. P., and Judd, D. K.: An Analysis of Seven Cases of Osteomyelitis of the Frontal Bone Complicating Frontal Sinusitis, Laryngoscope 43: 153-212 (March) 1933.

8. Behrens, H. C.: Osteomyelitis of the Skull of Otic and Paranasal Sinus Origin, Arch. Otolaryng. 25: 272-304 (March) 1937.

9. Courville, C. B.: Pathology of the Central Nervous System, Mount View, Calif., Pacific Press Publishing Association, 1937, pp. 131-133.

10. Mosher, H. P.: Osteomyelitis of the Frontal Bone, J. A. M. A. 107: 942-946 (Sept. 19) 1936.

11. Taylor, H. M.: Otitis and Sinusitis in the Swimmer, J. A. M. A. 113: 891-894 (Sept. 2) 1935.

pointed out, to two factors: "Foreign bacteria may gain entrance to the deeper portions of the nasal apparatus and the conjoined structures, or bacteria normally and constantly in this region may be allowed, by a lowered resistance on the part of the swimmer, to multiply to pathologic proportions."

Unfortunately this phase of the problem cannot be solved by the very best of bacteriologic control of swimming places by public health authorities. They cannot sterilize the swimmer's own nasal passages. It is to be hoped that educational efforts by members of the profession such as those by Taylor¹¹ and by Taylor and Dyrenforth¹² will encourage the teaching of proper breathing, the use of suitable devices, such as nose clips and ear plugs, while swimming, and the avoidance of chilling. Although such education may ultimately be expected to reduce the incidence of sinus infections, it is far too much to expect that the problem can be abolished by such means. "The old swimmin' hole" is not always conducive to the care requisite to these needs, nor are swimming and diving responsible for all cases of fulminating frontal sinusitis.

We turn then to the problem of the limitation of the infection to the sinus. We realize that not being rhinologists we tread here on unfamiliar ground, perhaps unwanted. In the rhinologic literature, particularly the standard textbooks, one finds little help. Most authorities appear content to "shut the door after the horse has been stolen" and advise treatment which could be adequate to drain the infected sinus only after evidence of osteomyelitis, meningitis or an abscess has appeared (Ballenger and Ballenger,¹³ Lederer,¹⁴ Turner,¹⁵ Thomson and Negus¹⁶). Others¹⁷ largely ignore the problem. Obviously treatment directed toward eradicating the infection in the sinus is, in the main, useless once the infection has spread to the frontal bone, the brain or the meninges. If the production of adequate surgical drainage of the sinus is ever indicated, if it is of any value in preventing the development of cranial and intracranial infection, it obviously must be applied, if it is to be effective, before the infection has spread.

It appears to us that in fulminating cases of frontal sinusitis associated with pain, tenderness, local swelling and fever, particularly those cases which follow swimming, adequate external drainage of the infected sinus becomes imperative on making the diagnosis. In taking this position we appear to have the support of Hastings,¹⁸ Adson and Hempstead,¹⁹ Williams and Heilman²⁰ and certainly of the rhinologic profession's first authority on the subject, Dan McKenzie.²¹ We wish to emphasize two qualifications to our statement.

First, we are referring only to acute fulminating frontal sinusitis, particularly those instances that follow

swimming, and do not wish to support the position apparently taken by Woodward,²² who seems to advise external surgical drainage for all cases, both acute and chronic, of frontal sinusitis.

Second, we do not presume to tell the rhinologists what constitutes adequate external drainage of the infected sinus. It does appear to us, however, that endonasal drainage is wholly inadequate for this purpose. It is too much to expect that the nasofrontal duct, which is "not infrequently . . . constricted and sinuous due to the encroachment of some of the frontal anterior ethmoidal cells" (Jackson, Coates and Jackson,¹⁷ p. 25) and always edematous and partly or completely obliterated as a result of the infection, will provide adequate drainage, even though partial resection of the middle turbinate, shrinkage of the mucosa or other endonasal procedures are also carried out. We would emphasize with Adson and Hempstead¹⁹ that "It is obvious that early drainage of a suppurating frontal sinus will preclude extension of the infection to the frontal bone and brain." But such drainage must be prompt, must be obtained before any extension of the infection beyond the sinus has occurred. And in these acute infections which follow swimming such extension occurs amazingly early, as our cases demonstrate.

It may be objected that such early surgical intervention in the presence of a fulminating infection will only serve to spread the infection and prevent its being localized. We would call attention to the fact that one is dealing here with an infection that does not tend toward spontaneous localization and spreads because it is confined to a bony cavity, the sinus, without adequate drainage. It is reasonable to suppose, therefore, that drainage may prevent the invasion of the venous system by the infection, which is present in the sinus under pressure, by providing it with an adequate channel of egress, which will relieve the pressure and provide for the removal of infectious material. We would further call attention to the fact that in each of the three cases recorded here the infection spread spontaneously and without any intervening or precipitating surgical procedures, and furthermore that it spread very early. Accordingly it is not to be expected that drainage of the sinus will be effective unless performed early, before any dissemination of the infection has begun, or that it will be able to control the infection in all cases irrespective of the virulence of the infectious agent or the patient's condition. Such would be contrary to all other therapeutic experiences.

TREATMENT OF OSTEOMYELITIS

McKenzie's original dictum that "once progressive osteomyelitis has set in, the only chance of saving the patient lies in the immediate and entire removal of the diseased bone"²¹ has at last been accepted by practically all neurologic surgeons (Fincher²³) and most rhinologists (Furstenberg,⁵ Mosher,⁶ Mosher and Judd,⁷ Mosher,¹⁰ Woodward,²² Skillern,²⁴ McKinney,²⁵ Wilensky,²⁶ McKenzie²⁷). However, some still persist in

12. Taylor, H. M., and Dyrenforth, L. Y.: Chilling of the Body Surfaces: Its Relationship to Aural and Sinus Infections, *J. A. M. A.* **111**: 1744-1746 (Nov. 5) 1938.

13. Ballenger, W. L., and Ballenger, H. C.: Diseases of the Nose, Throat and Ear, Philadelphia, Lea & Febiger, 1938.

14. Lederer, F. L.: Diseases of the Ear, Nose and Throat, ed. 2, Philadelphia, F. A. Davis Company, 1939.

15. Turner, A. L.: Diseases of the Nose and Throat and Ear, Baltimore, William Wood & Co., 1936.

16. Thomson, S. Clair, and Negus, V. E.: Diseases of the Nose and Throat, ed. 4, New York and London, D. Appleton-Century Company, 1937.

17. Jackson, Chevalier; Coates, G. M., and Jackson, C. L.: The Nose, Throat and Ear and Their Diseases, Philadelphia, W. B. Saunders Company, 1930.

18. Hastings, Hill: Osteomyelitis Associated with Frontal Sinusitis, *Arch. Otolaryng.* **13**: 181-186 (Feb.) 1931.

19. Adson, A. W., and Hempstead, B. E.: Osteomyelitis of Frontal Bone Resulting from Extension of Suppuration of Frontal Sinus, *Arch. Otolaryng.* **25**: 363-372 (April) 1937.

20. Williams, H. L., and Heilman, F. R.: Spreading Osteomyelitis of the Frontal Bone Secondary to Disease of the Frontal Sinus, *Arch. Otolaryng.* **25**: 196-207 (Feb.) 1937.

21. McKenzie, Dan: Diffuse Osteomyelitis from Nasal Sinus Suppuration, *J. Laryng., Rhin. & Otol.* **28**: 7-25; 79-84; 129-137, 1913.

22. Woodward, F. D.: Osteomyelitis of the Skull, *J. A. M. A.* **95**: 927-930 (Sept. 27) 1930.

23. Fincher, E. F.: Osteomyelitis of Skull, *South. Surgeon* **6**: 53-74 (Feb.) 1937.

24. Skillern, S. R.: Osteomyelitic Invasion of the Frontal Bone Following Frontal Sinus Disease, *Ann. Otol., Rhin. & Laryng.* **48**: 392-411 (June) 1939.

25. McKinney, Richmond: Osteomyelitis of the Frontal Bone, *Arch. Otolaryng.* **28**: 1-9 (July) 1938.

26. Wilensky, A. O.: Association of Osteomyelitis of the Skull and Nasal Accessory Sinus Disease, *Arch. Otolaryng.* **15**: 895-833 (June) 1932.

27. McKenzie, Dan: Further Observations on Spreading Osteomyelitis of the Skull, *J. Laryng. & Otol.* **42**: 293-308, 1927.

a more conservative attitude, insisting that osteomyelitis of the skull should be treated like osteomyelitis anywhere else in the body,²⁸ that is by drainage and the removal of sequestrums when they form (Hastings,¹⁸ Williams and Heilman,²⁰ Skillern²⁹). This view of cranial osteomyelitis completely overlooks the important and essential differences between such infection here and in other bones of the body. As both Fincher²³ and Adson and Hempstead¹⁹ have pointed out, osteomyelitis of the skull either untreated or inadequately treated commonly results in abscesses within the brain. Accordingly the only defensible treatment of osteomyelitis of the skull is early diagnosis and complete removal of all infected bone with interruption of the venous channels in the bone which bear the infection inward.

It has been maintained by some²⁹ that there are two types of osteomyelitis of the frontal bone secondary to frontal sinusitis: (1) a localized and (2) a diffuse

And that raises the question of how to recognize the development of this condition. As Mosher has repeatedly pointed out, and as the general surgeons and roentgenologists have known for many years, osteomyelitis does not give roentgenographic evidence of its presence for at least ten to fourteen days after the onset. Thus if the condition is to be recognized and treated early it becomes impossible to wait for or rely on the roentgenograms. Fortunately there is one constant and pathognomonic sign of osteomyelitis of the frontal bone, an edema of the forehead extending upward from the supra-orbital ridge. Such a development is positive in its implications both as to diagnosis and as to treatment.

How the operation is to be performed and what incision is to be used are matters of minor importance. Each operator should choose that incision and those instruments best fitted to his hands, although like most other neurosurgeons we admit to an unconquerable dis-

taste for and fear of the mallet and chisel. The only requirements are that the infected bone be entirely removed without lacerating the dura mater, with a minimum of trauma to other tissues and with as little hemorrhage as possible.

TREATMENT OF BRAIN ABSCESS

Each neurosurgeon has his own special technic for dealing with abscesses of the brain. Recently we have presented ours.³⁰ It undoubtedly has no great advantages over any other but in our hands has proved reasonably successful. Briefly it is as follows: The abscess having been localized, a trephine opening is made in the skull overlying it and enlarged to approximately 3 cm. in diameter. A stellate incision is made in the exposed dura mater, and the subdural space about the margins of the opening is packed with self-sedged gauze soaked in a weak solution of iodine

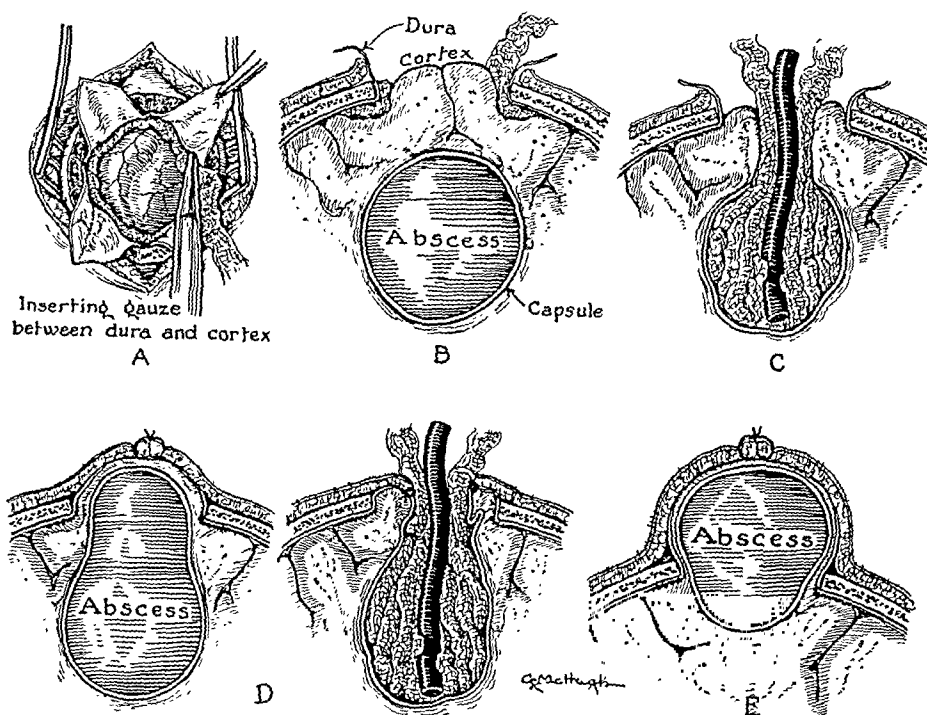


Fig. 12.—Treatment of brain abscess. First stage (A and B): A trephine opening is made over the abscess and enlarged to 3 cm. in diameter. The dura mater is incised and the subdural space is packed with self-sedged gauze soaked in a weak solution of iodine. The gauze is removed after two days.

Second stage (C): The usual appearance. The cortex overlying the abscess is removed and the abscess is evacuated, drained and packed. (D) When the abscess is partially herniated it may be marsupialized. (E) Occasionally it will be found to have herniated out of the skull and can then be removed in toto.

spreading type. We entertain serious doubts as to whether the slowly progressing localized type ever develops secondarily to an acute fulminating sinusitis. In any event we agree with Furstenberg and Mosher that the differentiation between a localized and a spreading, diffuse osteomyelitis is of no practical value to the surgeon as it is invariably a diagnosis in retrospect. The diagnostician does not exist who has the prophetic vision to foresee whether the process, which he is called on to eradicate in the acute stage, will remain localized or will spread. All osteomyelitis of the cranial vault should be removed completely as soon as the diagnosis is made.

(fig. 12). A blunt needle is then inserted through the cerebrum into the abscess and as much pus as possible is allowed to escape. The needle is withdrawn and the wound closed, bringing the end of the gauze out through the incision. Two days later the gauze is all withdrawn and approximately a week later the wound is reopened. In the interval the abscess may be aspirated, if necessary. When the wound is reopened the cerebral tissue overlying the abscess is removed by means of suction or with an electric cauter, and the abscess is incised and drained with large (diameter 1 cm.) firm rubber tubes.

There is only one point in the treatment of these abscesses which merits further discussion. Whenever possible the abscess should be approached through

28. Dixon, O. J.: Diffuse Cranial Osteomyelitis Complicating Frontal Sinusitis, *Ann. Otol., Rhin. & Laryng.* 43: 16-38 (March) 1934.

29. Skillern, R. H.: An Extensive Case of Acute Osteomyelitis of the Frontal and Superior Maxillary Bones Complicating Sinusitis, Operation, Apparent Recovery, Sudden Death, *Ann. Otol., Rhin. & Laryng.* 38: 1022-1032 (Dec.) 1929.

30. Bucy, P. C.: The Treatment of Brain Abscess, *Ann. Surg.* 108: 961-979 (Dec.) 1938.

uninfected tissue. All too frequently rhinologists and otologists operating in an infected field break the most invincible barrier to infection that the human body has—the dura mater. If the meningeal spaces have been obliterated this is, of course, without danger; but all too frequently such is not the case. Incision of the dura mater in an infected field is based on an erroneous assumption—that brain abscesses are produced by direct invasion of the brain through the dura mater. In fact, as we have earlier pointed out, the infection usually enters the brain through the venous system. Incision of the protecting dura mater in an infected field in the absence of a brain abscess exposes the leptomeninges directly to the infectious organisms and invites the development of meningitis. Even when an abscess is present, elevating the intracranial tension and compressing the meningeal spaces, the danger is by no means abolished and it would appear that this unwise procedure may account, in part at least, for the far too high mortality from this condition.

REGENERATION

Although regeneration of bony defects of the skull has long been known to occur, there is little available literature dealing with this subject. Furstenberg³ is one of the few to present any considerable number of cases and even he, unfortunately, gave few details. He studied eight cases in which bone had been removed from the cranium because of osteomyelitis. "In each of the eight patients now living and well, there is perfect obliteration of the cranial defect through the medium of regenerated bone." Most other authors, like Mollison,³¹ report a single instance and that briefly. The entire problem is badly in need of a thoroughgoing investigation with a large number of cases.

It is, however, our impression, along with that of many other neurosurgeons, that the defects secondary to the removal of osteomyelitic foci usually are repaired by bony regeneration, and that defects made by removing infected bone show a much greater tendency toward regeneration than bone removed with sterile technic, as in cases of brain tumor.

CONCLUSIONS

Three cases of cranial, intracranial and combined infection secondary to acute infection of the frontal sinus which followed swimming and one case in which such infection followed trauma to a styve were chosen as a basis for discussion. From these cases and a review of the literature it is concluded that:

1. The infection usually spreads to the frontal bone and invades the brain by way of the venous system.

2. Prevention of the fulminating frontal sinusitis, osteomyelitis and brain abscess, which so often follow swimming, can in a measure be attained by instruction regarding proper breathing and the use of protective devices. However, in the main prophylactic measures must be directed toward prevention of the spread of infection from the sinus. It appears that this can be best obtained by prompt external surgical drainage in the acute fulminating cases.

3. Osteomyelitis of the skull should be treated by excision of all of the infected bone as soon as the diagnosis is made.

31. Mollison, W. M.: Case Showing Re-Formation of Frontal Bone Removed Eight Years Ago for Acute Osteomyelitis. *Proc. Roy. Soc. Med. (Sect. Laryngol.)* 19 (pt. 3): 29 (Feb. 5) 1926.

4. Brain abscess should be drained through an uninfected area of the skull, if possible, with due attention to prevention of infection of the meninges.

5. Defects made by removing infected bone from the skull are probably usually repaired by the spontaneous regeneration of bone.

ANESTHESIA AND LIVER INJURY

WITH SPECIAL REFERENCE TO PLASMA
PROTHROMBIN LEVELS

S. C. CULLEN, M.D.

S. E. ZIFFREN, M.D.; R. B. GIBSON, PH.D.

AND

H. P. SMITH, M.D.

IOWA CITY

It is now a well established fact that patients with biliary fistulas or with chronic biliary tract obstruction do not absorb adequate amounts of vitamin K from the ordinary diet. Without absorption of this vitamin, prothrombin cannot be produced in the body and a marked tendency to bleed develops.

In many of these cases in which there are depleted reserves the prothrombin level is only slightly reduced prior to operation, but commonly it falls markedly after operation. This dangerous postoperative fall may be due to either of two factors: (1) excessive loss of prothrombin through hemorrhage at operation and through the postoperative formation of fibrin exudate in the margins of the wound and (2) interference with the manufacture of prothrombin by the liver. Such interference might result from decreased consumption of food or from injury to the liver. Such injury might be brought about by mechanical trauma at the time of operation or by absorption of toxic by-products from the operative site. Finally it might be produced by direct poisoning of the liver by the anesthetic agent employed.

Most workers¹ lean to the view that the anesthetic agent does produce sufficient liver injury to account for this postoperative fall in the prothrombin level.^{1a} This view appears, however, to be mainly conjecture, for in published data all the complicating factors mentioned were constantly present. We here present our own observations, which, except in the case of chloro-

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From the Division of Anesthesiology, Department of Surgery, and the Department of Pathology, State University of Iowa College of Medicine, and the Pathological Chemistry Laboratory, University Hospitals.

1. Stewart, J. D.: Prothrombin Deficiency and the Effects of Vitamin K in Obstructive Jaundice and Biliary Fistula. *Ann. Surg.* 109: 588-595 (April) 1939. Quick, A. J.: The Clinical Application of the Hippuric Acid and the Prothrombin Tests. *Am. J. Clin. Path.* 10: 222-233 (March) 1940. Smith, H. P.; Ziffren, S. E.; Owen, C. A.; Hoffman, G. R., and Flynn, J. E.: The Jaundiced Bleeder: Control of Hemorrhage Through Vitamin K Therapy. *J. Iowa M. Soc.* 29: 377-384 (Aug.) 1939. Rhoads, J. E.: The Relation of Vitamin K to the Hemorrhagic Tendency in Obstructive Jaundice with a Report on Cerophyl as a Source of Vitamin K. *Surgery* 5: 794-808 (May) 1939. Butt, H. R.; Snell, A. M., and Osterberg, A. E.: Further Observations on the Use of Vitamin K in the Prevention and Control of the Hemorrhagic Diathesis in Cases of Jaundice. *Proc. Staff Meet., Mayo Clin.* 13: 753-764 (Nov. 30) 1938.

1a. Warren and Rhoads, however, found that ether anesthesia in dogs failed to produce a prothrombin deficiency (Warren, Richard, and Rhoads, J. E.: The Hepatic Origin of the Plasma-Prothrombin Observations After Total Hepatectomy in the Dog. *Am. J. M. Sc.* 198: 193-197 [Aug.] 1939).

form, tend to minimize the role of anesthetics in affecting the prothrombin level. The two stage titration technic of Warner, Brinkhous and Smith² was used to determine the plasma prothrombin level.

THE EFFECT OF CHLOROFORM ANESTHESIA

That chloroform anesthesia produces injury to the liver of animals has been known for many years. More recently it has been shown by Smith, Warner and

TABLE 1.—Chloroform Anesthesia: Plasma Prothrombin Levels

Patient	Age	Operation	Duration of Anesthesia, Hours	Concentration of Anesthetic in Blood, Before Operation, Mg. per 100 Cc.*	Plasma Prothrombin Level, per Cent of Normal, Days After Operation						
					1	2	3	4	5	6	
1	22	Hernioplasty	1	...	106	100	60	87	75	...	107
2	38	Hernioplasty	1½	...	100	77	..	79	86	91	89
3	25	Hernioplasty	1½	...	97	79	98	104	113	...	...
4	18	Hernioplasty	1½	18	90	86	81	79	115	82	...
5	20	Appendectomy	1	17	100	70	87	63	73	83	94
6	..	Repair of cleft palate	1½	15	82	66	69	59	67	80	83.5
Average					96	78	79	79	88	84	93

* Analytic method for chloroform in blood: Two cc. of blood was discharged into 20 cc. of a 5 per cent solution of tartaric acid in 50 per cent alcohol and 10 cc. of distillate collected. One cc. of the distillate was diluted to 10 cc. with water, and 2 cc. of this was heated on the water bath for three minutes with 4 cc. of 20 per cent sodium hydroxide and 3.5 cc. of pyridine (Cole, W. H.: The Pyridine Test as a Quantitative Method for the Estimation of Minute Amounts of Chloroform, J. Biol. Chem. 71:173 [Dec.] 1926) with shaking. The sodium hydroxide layer was removed, the pyridine layer shaken with 12 per cent anhydrous sodium sulfate solution and removed and filtered. Trichloroacetic acid solution was used as a standard for the colorimetric comparison.

Brinkhous³ that owing to such injury there is a profound fall in the plasma prothrombin level.

That chloroform is injurious to the human liver has been accepted on clinical and autopsy evidence. The observations given in table 1 show that the prothrombin level also is influenced and falls markedly even though the anesthesia is not unduly prolonged. None of the patients listed showed evidence of vitamin deficiency or of preexisting disease of the liver or biliary tract, and in no case was there any manipulation about the liver at the time of operation. Only one of the patients had an intraperitoneal operation; the others had repair of a hernia or a harelip. The anesthesia varied in length from an hour to an hour and a half. Most of the patients were maintained in from light to moderate anesthesia (first or second plane, third stage). In case 5 the anesthesia was maintained at a lower level (third plane, third stage) for brief periods. The chloroform levels in the blood were determined in these cases and were found to be from 15 to 18 mg. per hundred cubic centimeters of blood.

Prior to operation the prothrombin levels were within normal range in all cases, though in case 6 it was only 82 per cent of the normal control level. Following operation there was a fall in every case with a variation of from 11 to 40 per cent and an average fall of 18 per cent. In some cases the lowest level was reached within twenty-four hours; in others it was not reached until from forty-eight to seventy-two hours had elapsed.

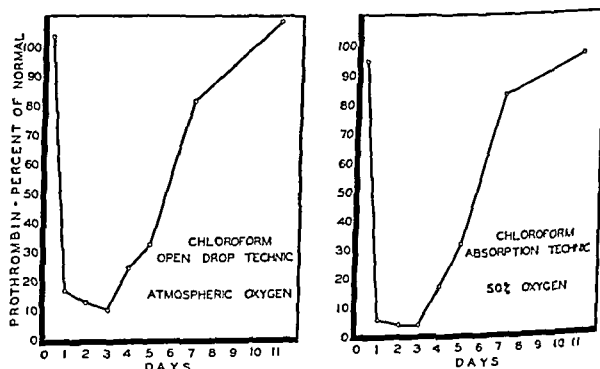
2. Warner, E. D.; Brinkhous, K. M., and Smith, H. P.: A Quantitative Study on Blood Clotting: Prothrombin Fluctuations Under Experimental Conditions, Am. J. Physiol. 114: 667-675 (Feb.) 1936. Smith, Warner and Brinkhous.³
3. Smith, H. P.; Warner, E. D., and Brinkhous, K. M.: Prothrombin Deficiency and the Bleeding Tendency in Liver Injury (Chloroform Intoxication), J. Exper. Med. 65: 801-811 (Dec.) 1937.

In a number of cases the plasma was slightly icteric at this time and in cases 5 and 6 the icterus was quite marked.

Recovery from the injurious effects of chloroform is usually evident on the third or fourth postoperative day and is typically complete within a week. Case 6 is the only one in which recovery was definitely delayed.

In five of the cases the chloroform was administered in a closed system by the absorption technic, the inhaled atmosphere containing at least 50 per cent of oxygen. In case 6, however, anesthesia was induced by the open drop technic and was then maintained by pharyngeal insufflation. A certain amount of obstruction and asphyxia was present. In this case the prothrombin fell to the low level of 56 per cent and there was oozing of blood from the operative site at this time.

Ravdin and his co-workers⁴ have presented evidence to indicate that in dogs asphyxia aggravates the harmful effect of chloroform on the liver. When they administered chloroform in air, some asphyxia was present and liver necrosis was more evident than when the chloroform was administered in an atmosphere rich in oxygen. Under normal working conditions the use of oxygen is undoubtedly a desirable precaution, but we have found in experiments on dogs that by careful elimination of respiratory obstruction and depression there is no need for enriching the atmosphere with oxygen. To prevent obstruction we used a mask covered only by a thin layer of gauze. As a further precaution a catheter was placed through the larynx into the trachea. The accompanying chart shows results in a representative dog which received chloroform for an hour and a half along with a gaseous mixture rich in oxygen. A companion dog received chloroform for the same period by the open drop technic, including the necessary precautions to prevent asphyxia. The plasma prothrombin fell to approximately the same level and at approximately the same rate in the two dogs. The recovery periods were likewise similar. It is evident that oxygen in excess is beneficial only as far as it is needed to correct defective ventilation. Oxygen in excess of this does not minimize the injury to the liver.



Similarity in depression of plasma prothrombin levels in dogs given chloroform anesthesia by the open drop and absorption technics when care is taken with both technics to eliminate asphyxia.

Incidentally the curves of the chart illustrate the fact that the fall in plasma prothrombin is much greater in dogs than in man under equal conditions of anesthesia.

4. Goldschmidt, Samuel; Ravdin, I. S., and Lueké, Balduin: Anesthesia and Liver Damage: I. Protective Action of Oxygen Against the Necrotizing Effect of Certain Anesthetics on the Liver, J. Pharmacol. & Exper. Therap. 59: 1-14 (Jan.) 1937.

THE EFFECT OF ETHER AND CYCLOPROPANE

There has been much interest in the possibility that ether, cyclopropane and other common anesthetic agents may likewise cause liver injury sufficient to produce the postoperative fall in prothrombin which is so commonly observed in the jaundiced bleeder. To study this problem we observed prothrombin levels in a number of cases in which operations were performed for

TABLE 2.—Ether and Cyclopropane Anesthesia: Plasma Prothrombin Levels

Patient	Age	Operation	Duration of Anesthesia, Hours	Concentration of Anesthetic in Blood, Before Operation	Plasma Prothrombin Level, per Cent of Normal, Days After Operation						
				Mg. per 100 Cc.	1	2	3	4	5		
Ether Anesthesia *											
1	19	Hernioplasty	1	67	83	105	103	102	122	100	
2	22	Hernioplasty	1	...	88	102	103	89	...	114	
3	49	Hysterectomy	1	107	103	103	90	109	120	95	
4	62	Bowel resection	3	...	90	...	86	80	89	104	
5	30	Drainage retro-peritoneal abscess	1¾	96	73	94	82	89	...	86	
6	59	Chordotomy	4	83	80	80	61	81	73	82	
7	30	Cholecystectomy	2	...	66	80	94	86	...	75	
8	43	Cholecystectomy	2	...	110	89	104	71	99	104	
9	42	Cholecystectomy	2	...	94	89	112	100	97	132	
10	42	Cholecystectomy	2½	...	102	110	114	103	100	...	
Average					89	94	95	91	100	99	
Cyclopropane †											
11	21	Pyelostomy	½	...	104	104	98	107	127	...	
12	26	Hernioplasty	1	...	100	100	100	115	100	94	
13	29	Hernioplasty	1½	15.4	84	105	116	88	99	132	
14	30	Hernioplasty	1½	...	93	75	107	94	81	...	

* Analytic method for ether in blood: One cc. of oxalated blood was distilled from 20 cc. of saturated picric acid solution into a cooled receiving flask containing standard dichromate solution (2.1288 mg. per liter; 10 cc. = 4.02 mg. of ether). Concentrated sulfuric acid (20 cc.) was added through a reflux tube. The excess dichromate when cool was titrated with a mixture of sulfuric acid, methyl red and ferrous sulfate according to Harger (A Simple Micromethod for the Determination of Alcohol in Biologic Material, J. Lab. & Clin. Med. 20:746 [April] 1935).

† Analytic method for cyclopropane in blood: Five cc. of blood plus 5 cc. of water were aerated through an iodine pentoxide train, the iodine released being caught in potassium iodide solution and determined iodometrically (Robbins, B. H.: Cyclopropane: A Method for Quantitating Cyclopropane in Air and Blood: Concentrations of Cyclopropane in the Air and Blood Necessary for Anesthesia, Loss of Reflexes and Respiratory Arrest, Anesth. & Analg. 16:93 [March-April] 1937).

various conditions. In all cases the anesthesia was administered by the absorption technic when an atmosphere containing at least 50 per cent of oxygen was used.

In table 2 patients 1 to 6 had conditions independent of disease of the liver or gallbladder, whereas patients 7 to 10 had gallbladder disease without jaundice or biliary fistula. These patients were given ether. There were a few irregularities in results, owing in part at least to unavoidable errors in the determination of the plasma prothrombin level. However, there was no consistent change in any of the cases and the average values show, if anything, a slight rise in prothrombin following operation. In all cases the anesthesia was of at least an hour's duration and in a number it was from two to four hours. In many cases there was a major operative wound and significant tissue trauma. In cases 11 to 14 cyclopropane anesthesia was used and was likewise without effect on the plasma prothrombin levels.

COMMENT

The marked fall in prothrombin which occurs post-operatively in patients with obstructive jaundice and biliary fistulas cannot be explained purely on the basis of these two anesthetic agents. It is evident that other factors play an important role. We have reason to believe that even when the individual suffers from Vitamin K deficiency the anesthetic alone has little or no effect on the plasma prothrombin level. In several dogs with obstructive jaundice or biliary fistula, in which the plasma prothrombin level fell over a period of weeks to from 30 to 70 per cent of normal, simple ether or cyclopropane anesthesia did not produce any further fall in the level.

The factor of trauma in causing the postoperative fall in prothrombin has been stressed by Lord.⁵ He found that in healthy dogs massage of the liver for twenty-five minutes produced a fall of from 20 to 30 per cent in the plasma prothrombin level. We have confirmed these results. In view of the lack of depression of the prothrombin level by ether and cyclopropane, it would seem that other factors such as mechanical trauma are more significant in the production of the fall in prothrombin observed in clinical practice.

SUMMARY

Chloroform anesthesia produces a fall in the plasma prothrombin level in man; this observation extends work done previously on animals. Neither ether nor cyclopropane anesthesia produces any such effect in the uncomplicated cases which we have reported. The fall in the plasma prothrombin level which occurs after operation in patients with obstructive jaundice or biliary fistulas is evidently due essentially to factors other than the anesthetic agent itself.

ABSTRACT OF DISCUSSION

DR. HUBERTA M. LIVINGSTONE, Chicago: During the past year Dr. J. Garrott Allen of the University of Chicago and I have studied the effect of ether, ethylene-oxygen, avertin with amylene hydrate, vinethene, and spinal and local anesthesia on the prothrombin concentration in the human being subjected to surgical procedures. These studies were carried out on twenty-two patients who had initial prothrombin deficiency and on sixty-eight patients in whom no prothrombin deficiency was present before operation. We conclude that ordinary anesthetics, blood loss and surgical trauma have little to do with changes in the prothrombin. Of the patients suffering from prothrombin deficiency brought on by either obstructive jaundice or biliary fistula, there was a fall in prothrombin concentration during the post-operative period even though the initial prothrombin deficiency had been corrected by vitamin K or one of its substitutes. This postoperative hypoprothrombinemia was regularly found between the first and seventh postoperative days, and it occurred even when local or spinal anesthetic agents were used. We have observed, however, that a close correlation existed between duration and intensity of preoperative vitamin K therapy and the rapidity with which the postoperative prothrombin deficiency appeared. Since none of the patients of either group received food by mouth before the fourth postoperative day, it is apparent that the prothrombin level must therefore have been maintained by the reserves of potential prothrombin present in the body at the time of the surgical operation. Thus it would seem that the length of time prothrombin concentration could be maintained at a normal level during the postoperative period would depend on the quantity of this reserve present at the time of operation. The sixty-eight patients studied in group 2 were selected because extensive surgical procedures were contemplated. Blood loss determinations carried out on ten of these patients showed a loss ranging from 420 to 1,150 cc., while the anesthetic periods ranged from one hour and twenty minutes to four hours and

5. Lord, J. W., Jr.: Effect of Trauma to the Liver on the Plasma Prothrombin, Surgery 6:496 (Dec.) 1939.

forty-five minutes. Of this entire group only one case showed any fall in prothrombin during the postoperative period. In this patient icterus developed on the second postoperative day associated with oliguria and hyperpyrexia, and she died on the fourth postoperative day, apparently of acute hepatic failure, although no autopsy was obtained. The results of our studies would seem to indicate that the most significant cause of the postoperative hypoprothrombinemia in the jaundiced and biliary fistula patients is not anesthesia or operative procedure but rather the failure to establish an adequate prothrombin reserve before operation.

DR. MILTON C. PETERSON, New York: The present widespread enthusiasm and interest with regard to prothrombin levels and vitamin K in the field of surgery makes it essential that the anesthetist be concerned with the prothrombin level as far as its relationship to anesthesia is concerned. In the discussion of this paper the project presented is much larger than might ordinarily be thought of at first observation, since the prothrombin level is dependent on vitamin K, its absorption and the function of the liver, which, as has been pointed out, may be impaired from a number of factors. Still another variable is presented, as the authors have stated, the unavoidable errors in the determination of plasma prothrombin level. In this regard I should like to ask Within what limits must a change occur to be significant with their methods? Also What percentage variation do they consider to be within the normal limits of determination? The apparent discrepancies between the observations of the present authors and those of Dr. Ravdin and his co-workers with regard to liver damage, with and without oxygen enriched mixtures, is at present without significance, as observations were made on histologic and pathologic studies of the liver itself, which may or may not parallel the plasma prothrombin level. This correlation has not been definitely established. Dr. Bourne's studies of liver function by means of dye retention would indicate impairment of liver function for a somewhat longer period of time than is suggested by alterations in the prothrombin level. It was stated that ether and chloroform did not cause a depression in prothrombin level. From the data presented, this would appear true of ether. On the other hand, one of four cases with cyclopropane demonstrated a fall equal to the average fall of the ten chloroform cases presented, although the other three cases demonstrated an insignificant fall or a rise. Because of the complicated variables in this study, conclusions must be guarded until a sufficiently large series is presented to equalize the variance.

DR. MAX H. WEINBERG, Pittsburgh: I should like to ask a question as to the method used in making these tests.

DR. STUART C. CULLEN, Iowa City: In answer to Dr. Peterson, who questions the extent of the limits of variability in prothrombin determinations, it can be said that the limits vary within 20 per cent. That is, a variation in normal individuals from 100 to 80 per cent would be considered within the limits of normal. Dr. Peterson also questions the advisability of using the plasma prothrombin determinations as a test of liver function. Comparative studies with other liver function tests have been done and indicate that function is equally reflected. It is evident that the number of cases followed in which cyclopropane was used is minimal and deserves further investigation, but it is hardly probable that any such conditions as occurred with chloroform will develop. Even though the average fall with chloroform was only 18 per cent, there was a wide variation from 11 to 40 per cent. Dr. Weinberg asked which method for the determination of plasma prothrombin was used. We used the two stage titration method of Warner, Brinkhous and Smith.

Millions of Casts.—The occurrence of casts in the urine of apparently healthy individuals has been shown by Addis. In subjects who were required to abstain from fluid during the day, the night urine (twelve hour period) contained on an average an estimated number of 1,040 casts, with individual values varying from 0 to 4,270. These numbers are insignificant in comparison to the tens and hundreds of thousands, and even millions, of casts excreted in a like period by nephritic patients. —Bodansky, Meyer, and Bodansky, Oscar: *Biochemistry of Disease*, New York, Macmillan Company, 1940.

THE TREATMENT OF CHRONIC DEAFNESS AND TINNITUS AURIUM WITH PROSTIGMINE

KARL MUSSER HOUSER, M.D.

EDWARD H. CAMPBELL, M.D.

AND

HARRY SCHLUEDERBERG, M.D.

PHILADELPHIA

In 1939 Davis and Rommel¹ reported a series of twenty-four cases of deafness and tinnitus aurium treated with prostigmine methylsulfate hypodermically, along with oral administration of prostigmine bromide. They concluded that patients with acute symptoms usually had restoration of hearing following five or fewer injections, that chronic cases showed encouraging results but responded less rapidly, and that tinnitus aurium was relieved or reduced.

A critical study of this work revealed that accurate hearing tests have not been used in the estimation of hearing loss both before and after treatment. On this account a letter was sent to the company manufacturing the drug stating this fact and asking if the company would cooperate in a comprehensive and well controlled clinical study of the effect of the product on hearing and tinnitus in several Philadelphia clinics. Full cooperation was obtained, and an adequate supply of materials was furnished for the test.

A series of fifty-six cases were studied and treated in the University of Pennsylvania, the Pennsylvania and the Episcopal Hospital clinics. No acute or subacute cases of tympanic and tubal inflammation were included, because such cases properly treated almost always recover without the use of prostigmine.

All cases were first studied with tuning forks and audiometers in the attempt to secure an accurate determination of hearing loss and the type of deafness present. In the table the average decibel and percentage loss is given for only 512, 1,024 and 2,048 frequencies. In testing, however, decibel losses for frequencies from 128 to 8,192 inclusive were obtained. The duration of deafness in the group studied had existed from one to eighteen years. Tinnitus aurium in some degree was present in all but six cases. The age limit was from 13 to 70 years. Most cases were treated and kept under observation for three months, none of the series being treated for less than two months. During the treatment period 1 cc. of prostigmine methylsulfate, 1:2,000 dilution, was given hypodermically every third day. In addition 15 mg. of prostigmine bromide was given after meals during the first six weeks of treatment. Audiograms were taken every two or three weeks while treatment was in progress. Local treatment if indicated, such as inflation and massage, or attention to nose, throat or sinuses, was not interrupted during the treatment period.

It is well recognized by otologists that audiograms taken on separate occasions will not always give identical readings in either the normal or the hard of hearing patient. Usually one allows for a +7 or -7 decibel variation. This fact should be understood lest one draw inaccurate conclusions from a decibel change of 15 or less. In our series seven patients, 12.5 per

1. Davis, T. Carroll, and Rommel, John C.: Treatment of Deafness and Contiguous Nervous Disorders with Prostigmine. *Arch. Otol.* 20: 751-758 (May) 1939.

cent, showed improvement in the right ear of 10 decibels or more. On the left side, 7.1 per cent were improved in this degree. Only two patients improved more than 15 decibels. Cases showing a +10 decibel or more gain can be identified in the table by referring to cases 4, 7, 9, 16, 24, 29 and 30. Of these patients only three, 16, 19 and 24, had enough improvement to be

their tinnitus. No untoward symptoms, except occasional slight nausea and minor vertigo, were reported by any patient.

CONCLUSIONS

1. In a series of fifty-six carefully tested and controlled cases of chronic deafness, prostigmine treatment failed to exert a definite beneficial effect.

Composite Table of All Patients Treated with Prostigmine.
Decibel estimations refer to averages for 512, 1,024 and 2,048 frequencies

Case	Age	Type of Deafness	Right Ear												Net Change			
			Tinnitus						Decibel Loss						Right		Left	
			Before		After		Before		After		Before		After		Decibels	Per Cent	Decibels	Per Cent
1	40	Mixed.....	+	+	43	45	35	36	63	60	51	48	— 2	— 1	3	3	3	3
2	20	Conductive.....	+	+	43	43	35	35	50	53	40	43	0	0	— 3	— 3	— 3	— 3
3	38	Conductive.....	+	+	50	55	40	44	53	65	43	52	— 5	— 4	— 8	— 8	— 8	— 8
4	35	Conductive.....	+	+	31	18	25	15	54	41	44	33	13	10	13	11	11	11
5	29	Perceptive.....	+	+	86	91	69	73	66	83	53	67	— 5	— 4	— 17	— 14	— 14	— 14
6	49	Perceptive.....	+	+	36	33	29	27	31	31	25	25	3	2	0	0	0	0
7	28	Conductive.....	+	+	63	53	51	43	58	45	47	36	10	8	13	11	11	11
8	46	Perceptive.....	+	+	100+	100+	100	100	51	48	41	39	0	0	3	2	2	2
9	58	Perceptive.....	+	+	63	48	51	39	54	43	44	35	15	12	11	9	9	9
10	65	Mixed.....	+	±	70	70	56	56	41	48	33	39	0	0	— 7	— 6	— 6	— 6
11	67	Perceptive.....	0	0	52	52	42	42	61	52	49	42	0	0	9	7	7	7
12	69	Perceptive.....	±	±	66	65	53	52	35	32	28	26	1	1	3	2	2	2
13	62	Perceptive.....	+	+	20	13	16	11	76	71	61	57	7	5	5	4	4	4
14	22	Mixed.....	+	±	71	66	57	53	75	73	60	59	5	4	2	1	1	1
15	55	Mixed.....	+	+	98	95	79	77	95	94	77	76	3	2	1	1	1	1
16	22	Perceptive.....	+	±	50	43	40	35	43	38	35	31	7	5	5	4	4	4
17	41	Conductive.....	+	+	28	28	23	23	32	35	26	28	0	0	— 3	— 2	— 2	— 2
18	16	Conductive.....	+	+	83	83	67	67	70	70	56	56	0	0	0	0	0	0
19	73	Mixed.....	+	±	67	63	54	51	88	57	71	46	4	3	31	25	25	25
20	45	Mixed.....	+	?	41	48	33	39	46	43	37	35	7	6	3	2	2	2
21	38	Conductive.....	0	0	32	35	26	23	41	36	33	29	— 3	— 2	5	4	4	4
22	71	Perceptive.....	+	+	18	12	15	10	48	41	39	33	6	5	7	6	6	6
23	63	Perceptive.....	+	+	41	36	33	29	38	36	31	29	5	4	2	2	2	2
24	42	Perceptive.....	+	±	28	12	23	10	13	11	11	9	14	13	2	2	2	2
25	25	Mixed.....	+	+	41	36	33	29	52	46	42	37	5	4	6	5	5	5
26	26	Perceptive.....	+	+	0	0	0	0	8	3	7	3	0	0	5	4	4	4
27	30	Conductive.....	+	±	14	10	12	8	6	6	5	5	4	4	0	0	0	0
28	70	Perceptive.....	+	±	51	51	46	46	73	65	59	52	0	0	8	7	7	7
29	72	Perceptive.....	+	+	53	39	43	39	50	48	40	39	14	12	2	1	1	1
30	65	Mixed.....	+	+	45	32	36	26	53	46	43	37	13	10	9	6	6	6
31	50	Perceptive.....	+	+	21	51	17	46	0	0	0	0	— 30	— 29	0	0	0	0
32	52	Perceptive.....	+	+	50	50	40	40	43	43	35	35	0	0	0	0	0	0
33	68	Perceptive.....	+	+	50	50	40	40	50	50	40	40	0	0	0	0	0	0
34	56	Perceptive.....	+	+	73	81	59	65	38	28	31	26	— 8	— 6	6	5	5	5
35	42	Conductive.....	0	0	23	23	19	19	21	28	17	23	0	0	— 7	— 6	— 6	— 6
36	40	Conductive.....	0	0	90	87	72	70	92	90	79	72	3	2	8	7	7	7
37	38	Perceptive.....	+	+	67	59	54	47	40	41	32	33	8	7	— 1	— 1	— 1	— 1
38	13	Conductive.....	0	0	14	15	12	13	18	13	15	11	— 1	— 1	5	4	4	4
39	54	Perceptive.....	+	+	20	22	16	18	28	21	23	17	— 2	— 2	7	6	6	6
40	43	Perceptive.....	+	+	45	48	36	39	58	53	47	43	— 3	— 3	5	4	4	4
41	21	Conductive.....	+	+	0	0	0	0	15	14	13	12	0	0	1	1	1	1
42	77	Mixed.....	+	+	46	41	37	33	46	38	37	31	5	4	8	6	6	6
43	16	Perceptive.....	+	+	28	21	23	17	45	40	36	32	7	6	5	4	4	4
44	66	Conductive.....	+	+	41	43	33	35	22	23	18	19	2	2	— 1	— 1	— 1	— 1
45	40	Conductive.....	+	+	73	73	59	59	81	82	65	66	0	0	— 1	— 1	— 1	— 1
46	47	Perceptive.....	+	?	38	41	31	33	43	41	35	33	— 3	— 2	2	2	2	2
47	23	Perceptive.....	+	+	77	82	62	66	88	82	71	66	— 5	— 4	6	5	5	5
48	53	Perceptive.....	+	+	65	65	52	52	54	67	44	52	0	0	— 9	— 8	— 8	— 8
49	32	Perceptive.....	+	+	46	46	37	37	81	81	65	65	0	0	0	0	0	0
50	48	Perceptive.....	+	+	71	71	57	57	65	65	52	52	0	0	0	0	0	0
51	38	Perceptive.....	+	+	15	23	13	19	52	65	42	53	— 8	— 6	— 14	— 11	— 11	— 11
52	49	Conductive.....	+	+	20	21	16	17	13	14	11	12	— 1	— 1	— 1	— 1	— 1	— 1
53	42	Conductive.....	+	+	88	80	71	64	89	85	64	68	8	7	— 5	— 4	— 4	— 4
54	27	Conductive.....	+	+	35	40	28	32	43	35	35	28	— 5	— 4	8	7	7	7
55	70	Perceptive.....	+	+	38	33	31	26	40	40	32	32	5	4	0	0	0	0
56	54	Conductive.....	0	0	35	30	28	24	35	35	31	31	5	4	0	0	0	0

SUMMARIES

Tinnitus Aurium	Changes observed in hearing status	Right	Left
Probable improvement.....	7.	16.	10.
Doubtful improvement.....	3.	14.	13.
Not improved.....	46.	19.	29.
		7.	4.

appreciable to the patient. One of these, patient 19, was syphilitic, and no improvement occurred until anti-syphilitic therapy was given. The final result then was two patients, 3.5 per cent, who felt that any practical improvement in hearing had occurred.

Seven of the treated patients felt that they experienced some relief of tinnitus, three were doubtful and forty-six were definitely not improved. No patients lost

2. It is doubtful that any real effect is produced on tinnitus aurium. Seven patients felt that some improvement had taken place. None lost their tinnitus completely.

3. Our studies lead us to believe that the treatment of deafness and tinnitus aurium with prostigmine is of but little if any value.

2010 Spruce Street.

FETAL AND NEONATAL DEATHS

A STATISTICAL ANALYSIS OF 2,000 AUTOPSIES

EDITH L. POTTER, M.D.

CHICAGO

In the Department of Obstetrics and Gynecology of the University of Chicago from Oct. 1, 1934, until April 1, 1940, we have had the opportunity of examining at autopsy more than 2,500 fetuses and infants of varying gestational age and extra-uterine age up to 1 year. This has in part been made possible by the cooperation of Dr. Herman Bundesen, president of the Chicago Board of Health.

The present report is based on 2,000 autopsies which comprise the entire group with the exclusion of the fetuses classed as abortions,¹ the infants over 1 month of age and those in which adequate maternal and infant histories were unavailable.

TABLE 1.—*Gestational Age in Relation to Time of Death*

	Previaible	Premature	Term	Total
Antepartum death	160 (8.0%)	265 (13.25%)	227 (11.35%)	652 (32.6%)
Intrapartum death	95 (4.75%)	139 (6.95%)	319 (15.95%)	553 (27.65%)
Neonatal death....	155 (7.75%)	348 (15.4%)	292 (14.60%)	795 (39.75%)
Total.....	410 (20.5%)	753 (37.6%)	838 (41.9%)	2000 (100%)

Six hundred and eight of the fetuses and infants were born and died at the Chicago Lying-in Hospital, 895 were sent to us for autopsy, and 497 were examined at autopsy elsewhere by Dr. Aaron Gunther for the Chicago Board of Health and tissues sent to us for microscopic examination. In each case a complete autopsy including examination of the head was performed and tissues were subjected to microscopic study. In all macerated fetuses and in others in which there was any suspicion of syphilis, Levaditi stains for spirochetes were included. Bacterial cultures and other procedures were used when indicated. The placentas were available for study in almost half of the cases. I made all microscopic examination of the tissues. The method of autopsy and the criteria on which the diagnoses were based have been reported in detail in other publications and will not be reviewed here.²

In such a series the sequence of events which has led to the death of any infant cannot be unfolded in detail, and often from the multiplicity of conditions which have played a part in the disastrous outcome only a single one, which to the investigator seems most important, can be recorded. The five factors which must be considered in each case are the time of death in relation to birth, gestational age at birth, method of delivery, complications of pregnancy and labor, and the pathologic lesions present in the body of the fetus or infant. In order to be as lucid as possible, I will discuss these various conditions individually.

From the Department of Obstetrics and Gynecology, the University of Chicago and the Chicago Lying-in Hospital.

Read before the joint meeting of the Section on Obstetrics and Gynecology and the Section on Pediatrics at the Ninety-First Annual Session of the American Medical Association, New York, June 14, 1940.

1. If the fetus fulfilled two of the three following criteria, it was classed as an abortion: length less than 35 cm., weight less than 400 Gm., gestational age less than twenty-two weeks. The arbitrary division is used since the Illinois law requires the reporting of all stillbirths in which the fetus is advanced to the fifth month of gestation.

2. Potter, Edith L.: Postmortem Examination of Stillborn and Newly Born Infants, Arch. Path. 25: 607 (May) 1938. Potter, Edith L., and Adair, F. L.: Fetal and Neonatal Deaths: An Analysis of 773 Such Deaths Occurring with 17,738 Deliveries at the Chicago Lying-in Hospital, J. A. M. A. 112: 1549 (April 22) 1939; Fetal and Neonatal Deaths, Chicago, University of Chicago Press, 1940.

AGE AT DEATH

Of the entire series 1,205 (60 per cent) fetuses were stillborn and 795 (40 per cent) were alive at birth. Six hundred and fifty-two (32 per cent) of the fetal deaths occurred prior to the onset of labor and 553 (28 per cent) took place during labor or delivery. Of the infants that were born alive 193 (24 per cent) lived less than one hour, 360 (45 per cent) more than one and less than twenty-four hours, and ninety-three (12 per cent) from twenty-four to forty-eight hours. One hundred and thirteen (14 per cent) died between the end of the second day and the end of the second week, and thirty-six (4.5 per cent) succumbed during the third and fourth week. One hundred and sixty-five infants who died between the end of the first month and the end of the first year were also examined during the course of this study but are not included in this discussion. It is interesting to note that the number of infants dying during the first forty-eight hours of life is identical with the number of antepartum deaths.

Seventy per cent of the 795 deaths occurred under forty-eight hours. This strikingly illustrates the fact, stressed by many investigators, that the first two days are the most crucial in the infant's entire existence. The majority of deaths during this time are the result of harmful conditions affecting the fetus during labor or delivery, and, if neonatal mortality is to be appreciably lowered, effort must be directed toward removing injurious conditions operating before the infant is born.

In the entire series 410 (20.5 per cent) fetuses and infants were previable,³ 753 (37.6 per cent) were viable premature⁴ and 838 (41.9 per cent) were at term (table 1). The stage to which pregnancy had advanced when death or delivery occurred is much the same in the antepartum, intrapartum and neonatal groups except

TABLE 2.—*Anatomic Manifestations in Relation to Time of Birth*

	No Abnormalities	Intracranial Hemorrhage	Asphyxia	Malformations	Infections	Syphilis	Erythroblastosis	Miscellaneous	Total, %
Antepartum									
Previaible..	79.7	....	6.4	10.1	2.0	1.2	....	0.6	100
Premature..	64.9	....	18.0	7.6	0.7	4.2	3.7	....	100
Term.....	68.0	....	20.2	3.0	2.4	1.8	4.4	0.4	100
Intrapartum									
Previaible..	64.2	13.7	12.6	5.2	3.2	....	1.0	....	100
Premature..	28.1	16.5	39.6	13.0	0.7	1.4	....	0.7	100
Term.....	19.4	28.0	36.6	9.1	6.3	0.3	1.6	....	100
Neonatal deaths									
Previaible..	71.8	9.4	5.8	2.0	11.0	....	....	....	100
Premature..	34.8	15.2	16.7	13.2	14.0	0.8	0.8	3.4	100
Term.....	13.0	27.5	8.4	22.0	19.7	0.7	5.4	3.3	100
Total.....	43.5	14.3	19.4	10.3	7.9	1.2	2.2	1.2	100

that during the intrapartum period the incidence among previable and premature infants is disproportionately low, suggesting that the factor of immaturity may be more of a hazard in establishing an extra-uterine existence than it is during the passage through the birth canal.

3. Two of the three following criteria: weight from 400 to 999 Gm., length from 22.1 to 35 cm., menstrual age 22 through 28 weeks.

4. Two of the three following criteria: weight from 1,000 to 2,499 Gm., length from 35.1 to 47 cm., menstrual age 29 through 47 weeks. Infants and fetuses falling in this group are hereafter referred to only as "premature."

ANATOMIC ABNORMALITIES FOUND AT AUTOPSY
(TABLE 2)

No abnormalities⁵ could be demonstrated in the bodies of 43.5 per cent (870) of the 2,000 fetuses and infants. This ranged from 80 per cent in the previable fetuses dying before the onset of labor to only 13 per cent in the mature infants dying after birth. In general, irrespective of the time of death, 70 per cent of the previable group failed to show pathologic changes, and even in those in whom abnormal conditions were found the lesions can hardly be considered the cause of death, since the infants would have died immediately after birth even in their absence. The actual causes of death must be sought in the conditions which incited labor prematurely. Also about 70 per cent of all fetuses who died before the onset of labor failed to show demonstrable changes other than maceration. In the term infants and fetuses who died during labor or after birth, pathologic lesions were absent in only about 15 per cent.

In the total autopsies, evidence of asphyxia⁶ was the pathologic state most frequently found and was present in 19.4 per cent (378). It was more common when death occurred during the intrapartum period (40 per cent in premature and term fetuses) than at

ous study of the fetal and infant deaths occurring at the Chicago Lying-in Hospital we have shown that of every 1,000 infants delivered there were about ten mature and ten premature who died. Two of the mature and one of the premature showed traumatic hemorrhages.

The total injuries in the present series consisted of 244 instances of hemorrhage within the cranial cavity, twenty-eight lacerations of abdominal organs and two fractures of the spinal column. In ninety intracranial hemorrhages the exact locus was unstated, in 129 it was associated with rupture of the vein of Galen or the dural sinuses, in twenty-four it was intraventricular (this was practically the only variety found in previable fetuses) and in eleven it was diffuse over the cerebral hemispheres. In twenty-four of the visceral injuries the organ involved was the liver; in the remaining four the hemorrhage was in the adrenals. In two cases the spinal cord was completely severed.

Malformations incompatible with life were found in 10.3 per cent (209) of the entire group. They were much more commonly a cause of neonatal death (14.4 per cent) than of stillbirth (antepartum death 6.7 per cent, intrapartum death 9.4 per cent) and were most often found in those infants who were born alive at

TABLE 3.—Anatomic Manifestations in Relation to Age at Death in 960 Live Born Infants

Age by Cause.....	Less Than 1 Hour		1-24 Hr.		24-48 Hr.		2-14 Days		14-30 Days		Total Birth to 30 Days		30 Days to 1 Year		Grand Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Prematurity.....	79	40.9	181	51.1	23	24.7	16	14.2	3	8.3	305	38.4	6	3.6	313	32.2
Asphyxia.....	12	6.2	34	9.4	8	8.6	3	2.7	1	2.8	58	7.3	3	1.8	63	6.5
Birth trauma.....	35	18.1	52	14.4	24	25.8	16	14.2	1	2.8	128	16.1	2	1.2	132	13.6
Malformations.....	40	20.7	28	7.8	11	11.8	28	24.8	7	19.4	114	14.3	23	13.9	139	14.3
Pneumonia.....	6	0.3	27	7.5	17	18.3	36	31.9	18	50.0	104	13.1	104	63.0	208	21.4
Erythroblastosis.....	5	2.6	7	1.9	2	2.2	1	0.8	..	..	15	1.9	..	..	16	1.6
Syphilis.....	1	0.5	3	0.8	1	1.0	..	..	..	..	5	0.3	4	2.4	9	0.9
Miscellaneous.....	3	1.5	10	2.8	3	3.2	3	2.7	..	..	19	2.4	..	..	20	2.0
Maternal toxemia without other cause.....	5	2.6	1	0.2	..	..	1	0.9	..	..	7	0.9	3	1.8	10	1.0
Unknown, term.....	7	3.6	14	3.9	4	4.3	9	8.0	6	16.7	40	5.0	20	12.1	60	6.3
Total.....	100%		100%		100%		100%		100%		100%		100%		100%	

any other time and was found in only 6 per cent of the infants born alive. The majority (80 per cent) of deaths in live born infants from this cause occurred in the group living less than twenty-four hours and in many of these respiration was never established. The complications which were present in association with this condition were much the same in the fetuses who died after birth and those who died during labor. They consisted largely of maternal hemorrhage from placenta praevia or premature placental detachment or from entanglements, prolapse or other abnormalities of the umbilical cord.

Traumatic hemorrhage was found in 14.3 per cent (274) of the entire group and was second in frequency to asphyxia. Its incidence in term infants dying either during labor or after birth was almost twice as great as in the premature and either two or three times greater than in the previable fetuses dying in the same periods. This indicates that of 100 mature infants and 100 premature infants who die during labor the likelihood of the mature infant succumbing as a result of mechanical injury and hemorrhage is twice as great as of the premature succumbing from the same cause. It must be kept in mind, however, that in general the total mortality rate for premature infants is from fifteen to twenty times as great as for those at term. In a previ-

term (22.0 per cent). Almost half (44.7 per cent) of the malformations consisted of hydrocephalus or anencephalus and the remainder were divided between cardiac 10.4 per cent, skeletal 7.6 per cent, gastrointestinal 4.2 per cent, miscellaneous and multiple anomalies 5.2 per cent. In addition to these major malformations there were thirty-eight minor anomalies such as clubfoot, harelip, extra digits and others in which the abnormality was not considered a cause of death.

Syphilis was definitely demonstrated in the bodies of only twenty-six (1.2 per cent) fetuses and infants. In an additional forty-seven there was a history of maternal syphilis or the Wassermann reaction was positive sometime during pregnancy. Many of these syphilitic women had been under treatment for varying lengths of time and in many of the offspring other definite abnormalities were present, so that although in some of these instances syphilis may have been a contributing factor, it was not the principal cause of death.

Infections other than syphilis were present in 158 (7.9 per cent) instances as the major cause of death. Almost all of these were pneumonia and occurred most commonly among the infants who died after birth (124, or 15.6 per cent), although evidence of intra-uterine pneumonia was present in 2.5 per cent (ten) of the fetuses dying before the onset of labor and in 4.4 per cent (twenty-four) of those dying during labor. Pneumonia occurring in fetuses who die prior to the onset

5. Maceration was not considered a pathologic lesion.
6. In this paper "asphyxia" is used to mean a condition in the fetus resulting from oxygen deprivation caused by obstruction to the umbilical circulation.

of or during labor and in infants who succumb within a few hours or days after delivery usually has a common etiologic background. Bacteria are admitted entrance to the amniotic fluid through early rupture of membranes, prolonged labor or some other complication. Aspiration of amniotic fluid introduces organisms into the lungs of the fetuses and an inflammatory reaction ensues. The possibility of pneumonia is a definite hazard to the fetus during a long and complicated labor, particularly when the membranes have ruptured early. In the majority of deaths from pneumonia such conditions were found.

The incidence of pneumonia as a cause of death increases with each day of extra-uterine life. It accounts for 6 per cent of the deaths on the first day, 18 per cent on the second, 32 per cent from the end of the second day to the end of the second week and 50 per cent during the third and fourth weeks. Among the 165 infants not included in this study who died between the end of the first month and the end of the first year, 63 per cent died of infections, largely pneumonia

TABLE 4.—Anatomic Manifestations in Relation to Method of Delivery in 895 Selected Infants and Fetuses

	Natural Cephalic		Low Forceps		Mid Forceps		Breech		Version and Extra-cesarean		Cesarean Section	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Hemorrhage associated with trauma	80	18.4	34	34.0	39	76.5	56	41.5	23	42.7	8	11.8
Hemorrhage associated with asphyxia.....	128	28.0	25	25.0	3	5.9	38	28.1	13	24.1	22	32.3
Infections.....	85	19.2	13	13.0	5	9.5	6	4.4	2	3.7	11	16.2
Other.....	11	2.5	1	1.0	..	..	..	..	..	..	11	16.2
No abnormalities, premature.....	93	20.5	9	9.0	1	2.0	27	20.1	10	18.5	10	14.7
No abnormalities, term.....	46	10.8	18	18.0	3	5.8	8	5.8	6	11.1	6	8.8
Total.....	443	100.0	100	100.0	51	100.0	135	100.0	54	100.0	68	100.0

All fetuses dying in the antepartum period or who were previable, malformed or suffering from syphilis and erythroblastosis have been eliminated.

(table 3). This does not include those cases in which the pneumonia was secondary to a communicable or other known disease.

In addition to the 7.9 per cent of fetuses and infants in which pneumonia was considered the primary cause of death, it was found in 3.7 per cent (seventy-four) as a complicating factor in combination with some other fundamental lesion. Intracranial hemorrhage (forty-four cases) was the condition with which it was most frequently associated.

METHOD OF DELIVERY

The pole of the fetus which presents in the maternal pelvis and the methods by which delivery is accomplished either as a result of natural forces or because of artificial termination necessitated by various complications bear an important relationship to the pathologic states found in the offspring. Deaths in which manner of delivery could have played no part include those which occurred before the onset of labor and those in which the fetus was previable, fatally malformed or suffering from erythroblastosis or extensive syphilis. If these, plus the fetuses on whom destructive operations were performed, are eliminated 787 cases remain (table 4). In caudal presentations, and in all operative terminations of labor except cesarean section, hemorrhage due to trauma was the most frequent cause of

death and was found more than twice as often as in natural cephalic delivery. In caudal deliveries the incidence was more than twice as great as in natural cephalic deliveries. This difference is not due to the fact that the number of the premature infants delivered by

TABLE 5.—Maternal Complications Present in 1,033 Women in Association with 2,000 Fetal and Neonatal Deaths

	Total Complications	Complications Considered of Greatest Importance	Complications Considered the Cause of Death
Toxemia.....	253	215	97
Abruptio.....	151	151	126
Placenta praevia.....	101	99	70
Minor hemorrhage and cord entanglements	133	117	53
Prolapsed cord.....	61	48	33
Uterine inertia, contracted pelvis, and so on	150	116	103
Syphilis.....	72	51	26
Diseases unrelated to pregnancy.....	92	61	30
Miscellaneous.....	189	149	84
Total.....	1,144	1,033	597

breech is proportionately greater than the natural cephalic deliveries. If mature infants alone are considered, the proportion of infants dying in the intrapartum and neonatal periods who show intracranial injury is 43.7 per cent in the caudal deliveries and 19.2 per cent in cephalic deliveries. Caudal presentation presents a distinctly greater hazard of birth trauma to the fetus than does a cephalic presentation. The incidence of infections in the fetuses and infants delivered by breech is only a little more than one fourth that found in those who are delivered naturally in a cephalic presentation. No explanation is known.

Complications of pregnancy or labor were present in 1,033 women (51.6 per cent, table 5). In 111, more than one condition was found. Toxemia occurred as the most common complication and was present in 12.6 per cent (253) of the mothers included in this study (these consisted of twenty-one cases of eclampsia, thirty cases in which hypertension alone was present, seven cases of hyperemesis gravidarum and 194 in which albuminuria, hypertension and edema were pres-

TABLE 6.—Final Diagnosis of Cause of Death of 2,000 Fetuses and Infants Based on Clinical and Anatomic Evidence

	Number	Per Cent
Prematurity.....	416	20.7
Asphyxia.....	324	16.1
Birth trauma.....	255	12.7
Malformations.....	203	10.4
Pneumonia.....	132	6.5
Erythroblastosis.....	39	1.8
Syphilis.....	26	1.2
Miscellaneous.....	22	1.1
Maternal toxemia without other cause.....	97	4.7
Unknown		
1. Premature.....	231	12.5
2. Term.....	249	12.3
Total.....	2,000	100.0
1. Antepartum deaths before term.		
2. Includes 145 antepartum deaths at term.		

ent). This is almost twice the incidence of toxemia (7 per cent) found by Dieckmann in the total mothers delivered at the Chicago Lying-in Hospital. It was considered the probable cause of death in only 4.9 per cent, or only when no demonstrable cause could be found in the bodies of the fetuses or infants. I have hesi-

tated except on rare occasions to say that toxemia was the specific cause of death, since it produces no definite pathologic changes and the infants of toxemic mothers may die of the same conditions which affect those born of nontoxemic mothers. It is perhaps wiser in such cases to say that the infants show no abnormalities but that there was an associated maternal toxemia.

Abruptio placentae was second in frequency with an incidence of 7.6 per cent (150). The placental and cord disturbances, which so frequently lead to fatal asphyxia in the fetus, when added together were found in 22.3 per cent of the cases and in the final analysis were considered the probable immediate cause of death in 14.4 per cent. Abnormalities of labor due to uterine inertia, contracted pelvis and so on occurred in 7.5 per cent and were considered in 5.2 per cent to have caused death by the production of asphyxia or intracranial injury.

Maternal complications accounted for 30 per cent, or almost one third of the entire group of deaths; in 48 per cent no known complications of any kind were present; in the remaining 22 per cent some condition found at autopsy was considered of more significance than the maternal complications.

for 20.7 per cent (416) of all deaths. Asphyxia 16.1 per cent, birth trauma 12.7 per cent, and malformations 10.4 per cent make up the next three leading causes. Pneumonia 6.5 per cent, infants otherwise normal but born of mothers with toxemia 4.7 per cent, erythroblastosis 1.8 per cent, syphilis 1.2 per cent and miscellaneous 1.1 per cent compose the remainder. The higher incidence of pneumonia in this series than that found in the majority of reports is probably due to the fact that secretions of all lungs were examined microscopically. It is almost impossible in the newborn to make a gross diagnosis of this condition, and without microscopic examination these infants are usually considered to be suffering from atelectasis.

This clinicopathologic classification of fetal and infant deaths was used as a basis of an attempt to discover what role maternal age, parity, color and the sex of the infant might play in the fatal outcome.

MATERNAL AGE

The maternal age was stated in 1,881 cases (table 7). In comparison with the figures showing distribution of live births in relation to maternal age compiled by the Bureau of the Census, the present series shows

TABLE 7.—Maternal Age in Relation to Cause of Death

Maternal Age.....	10-19		20-24		25-29		30-34		35-39		40+		Unstated		Total, %	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Prematurity.....	59	14.2	100	24.0	103	24.8	71	17.1	49	14.7	6	1.9	26	6.3	416	100
Asphyxia.....	32	9.8	80	14.6	72	22.2	67	20.6	35	10.8	27	8.3	11	3.3	324	100
Birth trauma.....	21	8.2	56	21.9	61	23.9	45	17.6	26	10.1	11	4.3	35	13.7	253	100
Malformations.....	16	7.6	56	20.7	50	23.9	37	17.7	22	10.5	5	2.3	23	11.0	209	100
Infections.....	17	12.8	36	27.2	29	21.9	23	17.4	15	11.3	6	4.5	6	4.5	132	100
Erythroblastosis.....	..	....	9	23.0	7	17.9	10	35.8	9	23.0	4	10.2	..	....	39	100
Syphilis.....	6	23.1	6	23.1	8	40.0	4	20.0	1	3.8	..	....	1	3.8	26	103
Miscellaneous.....	2	9.0	5	22.7	7	31.8	3	13.6	2	9.0	2	9.0	1	4.5	22	100
Maternal toxemia without other cause.....	1	1.0	14	14.4	29	29.8	22	22.6	17	17.5	12	12.3	2	2.0	97	100
*No known factors (premature).....	22	9.4	57	24.4	64	27.4	45	19.4	27	11.4	13	5.5	6	2.5	234	100
†No known factors (term).....	16	6.5	54	21.9	61	24.7	56	22.7	38	15.4	13	5.2	8	3.2	246	100
Total.....	192	9.6	473	23.4	491	24.3	383	19.0	241	12.0	101	5.0	110	5.8	2,000	100

* Antepartum deaths before term.

† Includes antepartum deaths in succeeding order: 6, 25, 35, 37, 24, 12, 3.

Eleven maternal deaths occurred in this series during pregnancy or in the immediate postpartum period. Two women died undelivered, one from hemorrhage as a result of rupture of the uterus, the other of eclampsia. Of the other nine, four deaths were due to hemorrhage (two associated with placenta praevia and two with premature detachment) and five were from eclampsia.

FINAL ANALYSIS

When all the information that could be obtained was at hand, each case was reviewed and a final conclusion reached as to the most probable cause of death (table 6).

In approximately 25 per cent no known factors were present in the maternal history which might reasonably have been expected to contribute to the fatal outcome, and no abnormalities were found in the bodies of the fetuses. Three fourths (376) of these died before the onset of labor. This group of fetuses in nontoxemic women who die without apparent cause present one of the most baffling problems in the study of fetal deaths and one which is in need of further investigation. The other one fourth (104) of the unknown group were at term and died during labor or after birth. Thus, only 5.2 per cent of the series died during labor or after birth of entirely unknown causes.

Among those in whom a cause of death was postulated, prematurity without demonstrable pathologic lesions made up the greatest number and accounted

a lower incidence of deaths in the mothers under 30 and a higher incidence over 30 than would be expected if the deaths were distributed evenly at all ages in proportion to births. The mother over 30 has proportionately a greater chance of having a dead baby than the mother under 30.

Most of the causes of death show little variation in incidence in the various maternal age periods, but several interesting factors may be noted. Although the incidence of antepartum deaths before fetal maturity averages about the same at all ages, prematurity without demonstrable pathologic conditions as a cause of death during or after birth is proportionately much more common in younger than in older women. There is a steady decline from 30.8 per cent in women less than 20 years of age to 7.9 per cent in the age group over 40. It would appear that although a woman under 30 is in general less likely to have a dead baby than is one over 30, if death does occur the infant is more apt to die of prematurity and is less apt to show definite pathologic lesions than is that of the older woman. The lower incidence of deaths from prematurity among older women cannot be definitely explained. Although some data have been published which seem to indicate a slightly longer period of gestation in multiparous than in primiparous women, in the present study the incidence of prematurity among primiparous and multip-

arous women is the same, so that this does not seem to be the cause. It may be that the improved social conditions which often come with increase in age or better antepartum care resulting for increased desire for motherhood may play a part in preventing premature labor.

TABLE 8.—Parity in Relation to Cause of Death

	Primigravida		Multigravida	
	No.	%	No.	%
Prematurity.....	142	21.0	248	20.5
Asphyxia.....	98	14.5	212	17.6
Birth trauma.....	116	16.3	113	9.4
Malformations.....	69	10.2	118	9.8
Infections.....	51	7.5	76	6.3
Erythroblastosis.....	...	....	38	3.2
Syphilis.....	10	1.5	14	1.2
Miscellaneous.....	6	0.9	15	1.2
Maternal toxemia without other cause..	36	5.3	55	4.6
No known factors, premature.....	75	11.2	166	12.9
No known factors, term.....	79	11.7	160	13.3
Total.....	676	100.0	1,205	100.0

The incidence of maternal toxemia in the absence of demonstrable pathologic changes in the infants and fetuses shows a fairly steady increase from 0.5 per cent in the age group under 20 years to 11.9 per cent in the group over 40 years.

Erythroblastosis shows a gradual but steady increase from 0 per cent under 20 years of age to 4 per cent over 40 years.

The incidence of birth trauma, malformations, asphyxia and infections shows little variation in incidence in the various age groups except that asphyxia is somewhat more and malformations are somewhat less frequent than the average in the age period over 40 years.

PARITY

The number of previous pregnancies which the mother had undergone was stated in 1,881 of the 2,000 cases. Because of the inadequacy of specific informa-

TABLE 9.—Cause of Death in Relation to Color

	White		Black	
	No.	%	No.	%
Prematurity.....	349	20.1	67	24.7
Asphyxia.....	287	16.5	37	13.7
Birth trauma.....	229	13.5	26	9.6
Malformations.....	195	11.3	14	5.1
Pneumonia, and so on.....	107	6.2	25	9.3
Erythroblastosis.....	37	2.1	2	0.7
Syphilis.....	15	0.8	11	4.0
Miscellaneous.....	21	1.2	1	0.3
Maternal toxemia without other cause..	86	5.0	11	4.1
No known factors, premature*.....	190	11.0	41	15.1
No known factors, term†.....	213	12.3	36	13.3
Total.....	1,728	100.0	272	100.0

* Antepartum deaths before term.

† Includes 129 white and sixteen black fetuses dying in antepartum period.

tion concerning abortions, no attempt was made to differentiate parity and gravidity. There were 676 who had had no previous pregnancies, 1,205 who had had one or more. Of these 389 had had one, 241 had had two, 171 three, 112 four, 79 five and the remainder six or more previous pregnancies. There is no appreciable difference between the incidence of any condition as a cause of death in the primigravida and multigravida with the exception that erythroblastosis does not appear in the first group and accounts for 3.2 per cent (thirty-

eight cases) in the second group; and the incidence of birth trauma is almost twice as great in the primigravida as in multigravida.

COLOR

The color was stated in the total 2,000 fetuses and infants; 1,728 (86.4 per cent) were white. Of the remainder 267 (13.6 per cent) were Negroes, two were Chinese and three were Mexican. The most marked differences in incidence of the various conditions in the two groups is in syphilis, which is five times as frequent among the Negroes as among white persons and in malformations, which are twice as common in white persons as in Negroes. Prematurity and infections are slightly but not appreciably higher among Negroes, while asphyxia and birth trauma occur with slightly less frequency.

SEX

Sex was stated in 1,910 instances; 54.5 per cent (1,040) were male, 45.5 per cent (870) female. The sex ratio for total births is 1,000 females to 1,004 males. In this study the ratio is 1,000 females to 1,200 males. No marked variations in cause of death were found in the two groups. Malformations show the greatest

TABLE 10.—Cause of Death in Relation to Sex

	Male		Female	
	No.	%	No.	%
Prematurity.....	227	21.8	175	20.1
Asphyxia.....	166	16.0	151	17.4
Birth trauma.....	150	14.4	96	11.0
Malformations.....	87	8.4	112	12.9
Pneumonia.....	76	7.3	51	5.9
Syphilis.....	11	1.1	14	1.6
Erythroblastosis.....	23	2.2	13	1.5
Miscellaneous.....	13	1.2	9	1.0
Maternal toxemia without other cause..	45	4.3	47	5.4
Unknown				
Premature *.....	110	10.6	106	12.2
Term.....	132	12.7	96	11.0
Total.....	1,040	100.0	870	100.0

* Antepartum deaths.

difference with an incidence of 8.4 per cent among males and 12.9 per cent among females, and birth trauma ranks next with an incidence of 14.4 per cent among males and 11.0 per cent among females. When the incidence of the various causes of death is calculated in individual groups in the antepartum, intrapartum and neonatal period, no further variations in relation to differences between the sexes are brought out.

SUMMARY

Fetuses dying before the onset of labor comprise almost one third of the total cases studied in this series. In approximately one half of these there were maternal conditions which may have caused death, and in at least one third there were neither maternal complications nor pathologic changes in the fetus. Toxemia and placental detachment were the most common two complications.

Deaths in the intrapartum period are usually due to some disturbance of the normal mechanism of labor and delivery. Intracranial hemorrhage is considerably more common in association with caudal and all artificial deliveries than in natural cephalic terminations of labor. The incidence of trauma among the premature group is less than that found in the mature group. Complications arising during pregnancy or labor are usually the reason for artificial terminations.

Deaths in the neonatal period are most frequently due to prematurity, secondly to birth trauma, thirdly to

malformations. Pneumonia is an extremely important condition and after the end of the first forty-eight hours is the leading cause of death.

CONCLUSIONS

It is extremely difficult to say in general which deaths are preventable and which are not. Those from malformations in our present state of knowledge are entirely nonpreventable, but all others theoretically are at least basically preventable. Although it is practically impossible to keep a previable infant alive, and this is a nonpreventable death after delivery has once occurred, modification of the status of the maternal organism before or during pregnancy might have permitted the pregnancy to go to term. If premature detachment of the placenta once occurs it is almost impossible to save the life of the fetus, but here again modification in the conduct of pregnancy and labor might have controlled the factors which eventually led to the separation. In competent hands the knowledge which we now possess is capable of reducing infant and fetal mortality rates to at least half of the current rates for the country as a whole. As our knowledge increases a nearer and nearer approach to the "irreducible minimum," which consists only of malformation, will be made and eventually perhaps even the cause of these will be discovered.

The fields in which the most reduction can at present be made are in those deaths due to trauma sustained during labor, to pneumonia, and in some parts of the country those due to syphilis.

The most common causes of death are as yet unsolved as to basic etiology and no known methods of prevention exists. The greatest saving of lives would be effected by the discovery of the cause of antepartum fetal death in nontoxic nonsyphilitic women, of the cause of premature onset of labor, and in the prevention of premature detachment of the placenta and placenta praevia.

Chicago Lying-In Hospital and Dispensary.

ABSTRACT OF DISCUSSION

DR. LUDWIG A. EMGE, San Francisco: Dr. Potter's talk is timely. Yesterday I pointed out in my chairman's address that the value of our efforts is greatly enhanced by cooperation. If physicians at large would be more cooperative in obtaining permission for autopsy the study of fetal and neonatal deaths would be greatly facilitated. Constituted authorities, particularly the health officers, are anxious for better information on infant deaths. Only if we cooperate to the fullest extent can this be achieved.

DR. EDITH L. POTTER, Chicago: I did not have time to show all that came out of this study. I have been glad of the opportunities afforded for autopsy study and I am grateful to the members of the Chicago Board of Health for their cooperation. If much is to be accomplished in the further reduction of neonatal deaths, it must be aided by individual investigation in individual hospitals. This series shows only general trends; it shows what is happening in our part of the country. If each individual hospital could examine its own infants and find out what is happening in that particular group, the obstetricians and the pediatricians would be stimulated. One frequently hears the statement that it is not worth while to "post" a baby because so little is usually found. In the material that I showed, only 5 per cent of the infants at term who were born alive failed to show some definite change at autopsy. It is just as important, however, to have negative observations as it is positive ones. It is just as important to know that an intracranial hemorrhage, a rupture of the liver or pneumonia is not present as it is to have those things definitely demonstrated.

DERMATITIS OF THE HANDS IN HOUSEWIVES

ROLE OF SOAPS IN ITS ETIOLOGY AND METHODS FOR ITS PREVENTION

JAMES W. JORDON, M.D.

FRANK A. DOLCE, M.D.

AND

EARL D. OSBORNE, M.D.

BUFFALO

Eczematous dermatitis of the hands in housewives is one of the commonest and most refractory conditions for which dermatologists are consulted. Although we recognize that a diversity of allergens may cause this type of dermatitis, it is our belief that the majority of cases are caused by hypersensitivity to ingredients of soaps and allied cleansers.

In 1936 we¹ did extensive patch test experiments both on normal individuals and on patients who had an eczematous type of dermatitis in an attempt to determine the allergenic properties of soaps. The results of that study convinced us of the importance of soaps, laundry preparations and allied household cleansers in the production of eczema.

In this study we discuss the pertinent chemistry of soaps and allied cleansers, report our observations on the clinical features of housewives' eczema due to these substances and evaluate patch tests as a diagnostic procedure in individual cases. Methods of prevention and control of this common condition will be discussed.

Soap, by definition, is a metallic salt of a higher fatty acid but, for practical purposes, because all others are insoluble, only the sodium, potassium or, rarely, ammonium salts are used for cleansing purposes. Soap manufacturers employ a large number of fats and oils both of animal and of vegetable origin in the manufacture of soap. Fats and oils are a mixture of the glycerides of the higher fatty acids. The type and amount of fatty acids present in a fat or oil depend on its origin. The animal fats and oils contain chiefly stearic, palmitic, oleic and linolic acids. Certain of the vegetable fats and oils, in addition to these, may contain lauric, myristic, capric and small quantities of other fatty acids. Soaps, therefore, are mixtures of the alkali salts of these fatty acids. The types and percentages vary with the fats or oils used in the manufacture of the soap.

Soap as it is marketed is not a simple mixture of the sodium or potassium salt of the higher fatty acids but contains a great many other substances, among them rosin, which may be present in quantities as high as 30 per cent. Sodium silicate, or water glass, may be present in poor soaps in quantities as high as 40 per cent. Sodium carbonate and trisodium phosphate are commonly present in soap powders. Naphtha and borax may be present. Numerous perfumes which are mixtures of essential oils, gums, resins, balsams and animal products such as ambergris, musk and civet, along with synthetic perfumes, are employed. Many of these compounds are well known eczematizing agents.

From the Department of Dermatology and Syphilology, University of Buffalo School of Medicine.

Read before the Section on Dermatology and Syphilology at the Ninety-First Annual Session of the American Medical Association, New York, June 12, 1940.

1. Jordan, J. W.; Walker, H. L., and Osborne, E. D.: Studies in the Eczematizing Properties of Soaps, *New York State J. Med.* **36**: 791-795 (May 15) 1936.

All soaps in aqueous solution undergo hydrolysis to a greater or lesser extent and thus are split up into free alkali and free fatty acid. The degree of hydrolysis depends somewhat on the fatty acids employed in the manufacture, the temperature of the solution and the concentration of the soap. Even a neutral soap, therefore, liberates free alkali when in solution. Some observers are of the opinion that specific hypersensitivity to alkalis is not uncommon. The fatty acids also in themselves are potential eczematogenous agents. Blank² found that fatty acids of low molecular weight, particularly those derived from coconut or palm kernel oil, were in themselves irritating to the skin and that the higher fatty acids, such as palmitic, oleic and stearic, in the presence of alkali were also irritating to the skin. Dermatitis from certain fatty acids has been reported from time to time in the literature.³

In this paper the term soap is employed in a broad sense and means the sodium or potassium salt of the higher fatty acids, together with any substances which may be added to the final product as marketed.

During the past four years we have observed 239 patients in private practice who had a dermatitis on the hands, with or without involvement of other areas, in whom soaps appeared to be the exciting cause. Of these patients 61 per cent were housewives or domestics doing general housework. The remaining 39 per cent were for the most part engaged in occupations that required frequent contact with soaps and allied cleansers. Among them were dishwashers, cooks, hairdressers, bartenders, surgeons, nurses and orderlies. All age groups were represented but most patients were between the ages of 20 and 40. The average period from the time of the first attack of dermatitis of the hands until the patient came under our observation was three years. The longest period was twenty years, the shortest one week. The group had used fourteen different toilet and fifteen different laundry soaps, flakes or powders. All had employed two or more and many several of these cleansers. We were unable to determine from their histories whether or not certain brands of cleansers were more apt to produce eczema than others.

Based on the histories of these 239 patients and on our clinical observations and studies, we believe that the following are the cardinal features of eczema due to soaps and allied cleansers: Most patients in whom the first attack of dermatitis appeared more than a year before they came under our observation noted that they were either completely free from the condition or improved during the warm months. A high percentage of the patients noted improvement during periods of vacation, illness or other lapses in routine when soap and cleansers were used infrequently. Many patients observed that an attack was precipitated or an existing dermatitis made worse when these substances were frequently used. Nearly all patients reported periods of exacerbation and quiescence, and many patients had periods of complete freedom lasting from a week to several years.

In most instances the dermatitis was vesicular and was confined to areas on the hands. In general it was worse on the right hand of right-handed women and on the left of left-handed women. It seldom involved the entire dorsal aspects of the hands. Most patients

had patches on the dorsum of the hands with involvement of one or more of the fingers. The interdigital areas were frequently involved, the palms rarely. The next most commonly involved area was the wrist. In a few instances the dermatitis spread to the forearms and arms and other areas uncovered by clothing. In such instances the flare-ups usually coincided with the doing of laundry or other work that involved the immersion of the hands and arms into solutions of soaps or allied substances. When the face was involved, the patient usually had been exposed to steam and fumes arising from hot solutions of these substances.

The eczema in many of our cases had been erroneously diagnosed as ringworm and nearly all longstanding cases had run the gamut of ringworm remedies. They were either unimproved or made worse by treatment of this type. The diagnosis in our cases was made by a carefully taken history including the duration of the condition, the frequency of exposure and the types of soap and allied cleansers employed in the household. The patients were carefully questioned regarding improvement when these substances were infrequently handled and whether exacerbations occurred following more than the usual degree of exposure. Many of the patients had been observed during several acute attacks. Most patients admitted that attacks came when they had become careless in carrying out preventive measures. All were questioned about contact with other eczematizing substances and these substances were ruled out as a cause of the dermatitis either by history, observation or patch tests, the limitations of the latter procedure being borne in mind.

Patch tests were done almost as a routine during the first two years of this study. We found that they were of very limited value as a diagnostic procedure in individual patients, since it was impossible to duplicate by patch test studies the actual conditions of contact. Such factors as the degree and frequency of exposure, which are of paramount importance in soap dermatitis, cannot be duplicated by patch tests. The alkali present in a drop of soap solution applied as a patch test is rapidly neutralized by the acids present in the sweat and, although we do not believe that alkali is the important eczematizing substance of soap, Blank² has shown that the fatty acids usually employed in the manufacture of soap are more irritating to the skin in the presence of alkali. Obviously, when the hands or arms are immersed in large amounts of soap and cleansers the alkali is not neutralized. We therefore have discontinued patch tests as a routine diagnostic measure in suspected cases and depend on the history and clinical observations.

In our previous communication¹ we expressed the opinion that eczematous responses to patch tests with soap solutions in dilutions greater than 1:100 in most patients represented an allergy to one or more of the ingredients of the soap to which the patient reacted. This view was based on the relative infrequency of eczematous reactions to dilute soap solutions among patients with normal skins and the frequency of reaction among those who had eczema. Later, Osborne and Walker⁴ in patch test experiments on the skin of newborn babies found that none reacted in an eczematous manner to a soap solution in a dilution of 1:100 and thus demonstrated that this dilution of soap does not

2. Blank, I. H.: Action of Soap on Skin, *Arch. Dermat. & Syph.* 39: 811-824 (May) 1939.

3. Hailey, W. H.: Dermatitis from Oleic Acid, *Arch. Dermat. & Syph.* 8: 530 (Oct.) 1923. White, R. P.: The Dermatogoses, New York, Paul B. Hoeber, Inc., 1929.

4. Osborne, E. D., and Walker, H. L.: Contact and Environmental Allergens as a Cause of Eczema in Infants and in Children, *Arch. Dermat. & Syph.* 38: 511-538 (Oct.) 1938.

produce an eczematous response owing to primary irritation or inherent hypersensitiveness in the infant. Those reactions encountered in later life must therefore in most instances be due to a specific altered epidermal response that causes the skin to react in an eczematous manner to the ingredients of soaps. Patch tests when strongly positive (vesicular or papulovesicular) are of diagnostic value but many patients with eczema due to soaps proved by clinical observation give negative responses to these tests.

The allergic nature of eczemas due to soaps and allied cleansers was further demonstrated by clinical observation of our patients. Most had been using the same soap or cleanser for weeks, months or years before an eczematous dermatitis appeared. Following the appearance of the eczema, they were unable to tolerate to the same extent a preparation which previously had caused no difficulty.

METHODS OF PREVENTION AND TREATMENT OF SOAP DERMATITIS

During the first two and a half years of this study we attempted to allow healing of existing lesions and prevent recurrences of the dermatitis by instructing our patients to wear cotton gloves covered by rubber gloves whenever it was necessary to perform household duties that required the use of soaps or allied cleansers. The purpose of the cotton gloves was to absorb moisture and prevent irritation from rubber. We employed olive oil or liquid petrolatum to cleanse the affected areas of the skin, since there was no good detergent that was available as a substitute for soap. The only other measures employed were the use of simple soothing wet dressings, ointments or lotions, depending on the degree and severity of the dermatitis. Under this regimen the dermatitis in nearly all cases improved or disappeared. If definite improvement was not manifest at the end of two weeks, other possible undiscovered allergens were searched for as a cause. These measures were efficacious in controlling acute attacks of soap dermatitis. Most of our patients, however, found it impracticable to avoid soaps and allied cleansers for long periods of time and thus had recurrences. It was apparent that the only solution to the problem of soap dermatitis lay in the substitution of some soapless detergent that could be employed both for toilet and for general household use. Such a detergent, to meet all the requirements of a suitable substitute for soaps and allied cleansers, must itself have a low sensitizing index, be nonirritating to the skin, compare closely to soap in cost and have physical properties that permit it to be marketed in liquid, bar or powdered form. Blank² recently investigated and reported on the use of a mixture containing a sulfonated oil as a substitute for soap in cases of soap eczema. He found that the compound he employed was relatively nonirritating and had good detergent properties.

During the past sixteen months we have had 150 patients use this mixture as a substitute for toilet soap. Seventy-nine of these were housewives with eczema due to soaps. The remaining seventy-one patients had some other dermatoses. Many used the compound as a shampoo. Fifty-one of the seventy-nine patients who had a soap dermatitis were entirely free from the eruption or the eruption was greatly improved as long as they used only the oil and avoided all contact with soaps or allied cleansers. Twenty-six were not seen after the preparation had been prescribed and two of the patients had a

flare-up of the dermatitis following the use of the compound. Sixty-six of the seventy-one patients who had some dermatosis other than soap eczema and who used this compound tolerated it well. Four were not seen after the preparation had been prescribed and one tolerated it satisfactorily for four weeks, and then suddenly an acute dermatitis developed from its use. A patch test done with the oil was strongly positive. This was the only definite instance of allergy that developed among our 150 patients following the use of this sulfonated oil.

All the patients were satisfied with the cleansing action of the compound; many used it in a routine manner as a shampoo. Most patients, however, found it an unpractical substitute for soaps. Since it is a liquid, it is not suitable for the bath and it cannot be used for general household cleansing purposes. Its cost is prohibitive for long continued use as a substitute for toilet soaps by most patients. The preparation, therefore, fulfils only a few of the requirements for an ideal substitute for soaps and allied cleansers.

During the past year we have been investigating the alkyl sulfonates⁵ for their possibilities as substitutes for soap and household cleansers. These compounds can be made by the sulfonation of higher fatty alcohols derived from the fatty acids ordinarily used in the manufacture of soap or from cheaper substances such as petroleum derivatives. The compounds thus obtained are solids and therefore can be prepared in bar form for toilet use or in powdered form for general household cleansing purposes. They are neutral in reaction and do not hydrolyze as do soaps and can be used with either acids or alkalis. Their calcium and magnesium salts are soluble in water and therefore they leave no deposit of these salts as a scum in bathtubs, sinks or other receptacles and no greasy spots in clothing. They are much more effective as emulsifying and detergent agents than are soaps and are stable under ordinary atmospheric conditions. They do not oxidize or turn rancid as do soaps. These compounds can be prepared and marketed at a cost that compares favorably with soap and have been employed extensively in the textile industry as a substitute for soap with marked success.

Some of these compounds have been used during recent years as a substitute for soap in shampoos, tooth pastes and powders and liquid dentifrices. Kitchin and Graham⁶ investigated the alkyl sulfonates as a substitute for soap in dentifrices and found them superior to soap as a detergent. They noted no evidence of inflammation of the soft tissues of the mouth from their use. Epstein and his co-workers⁷ studied these compounds for possible toxic effects that might follow accidental ingestion of them. They found them as harmless as soap.

The foregoing makes it apparent that this group of compounds is an ideal substitute for soap in cases of housewives' eczema due to soap and allied cleansers from the standpoints of comparative cost and physical properties. We therefore have attempted to determine whether they had the other two requirements of an ideal

5. Griffith, I.: Pharmaceutical Applications of Sulfonated Lauryl Alcohol and Kindred Products, *Am. J. Pharm.* **106**:176-177 (May) 1934. Redgrove, H. S.: Higher Fatty Alcohols in Cosmetics, *Am. Perfumer* **38**:35, 1939. Zimmerman, H.: The Search for Textile Detergents, *Can. Chem. & Met.* **21**:366, 1939.

6. Kitchin, P. C., and Graham, W. C.: Sodium Alkyl Sulfate as a Detergent in Tooth Paste, *J. Am. Dent. A.* **24**:736,755 (May) 1937.

7. Epstein, S.; Thorndorn, A. H.; Dock, William, and Tainter, M. L.: Possible Deleterious Effects of Using Soap Substitutes in Dentifrices, *J. Am. Dent. A.* **26**:1461, 1939.

soap substitute; that is, whether they were nonirritating and had a low sensitizing index.

The alkyl sulfonate employed in this study is known chemically as lauryl sulfoacetate but, since pure lauryl alcohol is not available commercially, the compound, in addition to the chief ingredient, contains variable amounts of alkyl sulfonates derived from other higher alcohols present in the material from which it is synthesized. Patch test experiments were done with this compound on 150 patients to determine whether it was irritating to the skin. The tests were applied in dilutions of 1:10, 1:25, 1:50 and 1:100. They were left on the skin for twenty-four hours and read at the end of that time and again in forty-eight hours and seventy-two hours. Ninety of the 150 patients chosen had an eczematous dermatitis; the remaining sixty had no known allergic condition. A few of the subjects developed a mild erythema from dilutions of 1:10. These reactions were considered to be of no significance. Three of the ninety eczematous patients developed papular to papulovesicular reactions to one or more of the dilutions. One of these had a mild papular reaction to a 1:10 dilution and a mild erythema to the other dilutions; the other two had vesicular reactions to dilutions of 1:10 and 1:25 and papular reactions to dilutions of 1:50 and 1:100. One of these three patients had previously had a dermatitis from a shampoo containing an alkyl sulfonate. We were unable to elicit a history of any contact with alkyl sulfonates from the other two. None of the sixty nonallergic patients gave a positive reaction. The tests, therefore, demonstrated that in the concentrations employed the substance studied was not a primary irritant.

Patch tests of this type do not give an index of the sensitizing properties of the substances employed, since most of the subjects chosen may not have had previous contact with these compounds and therefore no opportunity to develop sensitization to them. To determine the cutaneous sensitizing index of a compound, it is necessary to use it on the skin for a variable period of time and determine whether a sensitization dermatitis ultimately results from repeated exposure to the substance.

There have been rare reports in the literature of dermatitis venenata from these compounds⁸ and prior to this study we observed two instances of sensitization dermatitis from their use. One patient developed a severe dermatitis from the use of a shampoo, and another from a tooth powder containing an alkyl sulfonate. However, considering the extent of the use of these compounds in the textile industry and more recently in shampoos, dentifrices and cosmetic preparations, with the paucity of reports in the literature of dermatitis from their use, they did not appear to be very active eczematizing agents.

We instructed twenty-seven patients who were allergic to soaps to use cakes made of the compound undiluted as a substitute for soap. Twenty-six of the patients tolerated the preparation satisfactorily. One of the group, a man who had polysensitivities, used the substance for two weeks and then a dermatitis developed from its use. A patch test was done with a 10 per cent solution of the preparation and a papular reaction developed at the end of twenty-four hours.

In addition to the compound containing lauryl sulfoacetate we have also been studying another of the alkyl sulfonates, aryl alkyl sulfonate. This alkyl sulfonate is manufactured from a petroleum derivative and is therefore much cheaper than the alkyl sulfonates manufactured from the fatty alcohols. The compound is markedly detergent and, because of its low cost, may be a suitable substitute for laundry soaps and for other general household cleansers.

The compounds mentioned are markedly efficient as emulsifying agents of cutaneous fats and, in full strength, are too detergent for the human skin. High concentrations produce excessive dryness of the skin through removal of cutaneous fats. To make a suitable toilet preparation, it is necessary to use these compounds in low concentrations in suitable vehicles. They can be put in aqueous solution and used the same way as liquid soap or in oil, or water in oil preparation, or they can be incorporated in a suitable nonirritating, water soluble, solid, inert substance. Our experience up to the present time indicates that 10 per cent lauryl sulfoacetate in a suitable vehicle is as detergent as most toilet soaps. In this concentration it does not produce excessive dryness.

While a certain number of patients undoubtedly will develop sensitization dermatitis from the prolonged use of these compounds, it is our opinion that they are not primary irritants or highly eczematizing in concentrations sufficient for cleansing purposes. Our studies lead us to believe that they come closest to an ideal substitute for soap that has yet been developed, since they compare favorably with soap and other cleansers in cost, they are solids and they can be used for toilet, laundry and general household cleaning purposes. They are nonirritating to the skin in concentrations sufficient for cleansing purposes and have a low sensitizing index.

SUMMARY

1. Soaps and allied cleansers are important causes of eczema of the hands in housewives or others whose occupations require frequent exposure to them.

2. The important clinical features of eczema due to soaps and allied cleansers include the following: (a) The eruption is usually vesicular with a patchy distribution on the dorsum of the fingers, hands and occasionally other exposed areas. (b) The eczema tends to improve in warm weather and in general is better or worse, depending on the degree and frequency of exposure to these substances. (c) Many of these cases are erroneously diagnosed as ringworm and unsatisfactorily treated as such.

3. Patch tests are of limited value in the diagnosis of individual cases, but when they are positive in dilutions of 1:100 or greater they indicate an allergy to one or more of the soap ingredients.

4. Methods of prevention and control depend on (a) avoidance of contact with soaps and allied cleansers, (b) local applications consisting of soothing wet dressings, lotions and ointments and (c) the use of suitable substitutes for soap and allied cleansers.

5. A sulfonated oil has advantages and disadvantages in comparison with the alkyl sulfonates as a substitute for soaps. We believe that the latter group of compounds, when used in suitable concentrations, most closely approximate the ideal soap substitute available at the present time.

471 Delaware Avenue.

S. Biederman, J. B.: Sensitivity to Drene Shampoo. *New England J. Med.* 217: 1088-1089 (Dec. 30) 1937. Carpenter, C. C.: Dermatitis Produced by Hymolal Salts (New Soaplike Material). *Arch. Dermat. & Syph.* 30: 517 (Oct.) 1934.

ABSTRACT OF DISCUSSION

DR. JOSEPH V. KLAUDER, Philadelphia: I do not believe that the compound soap is allergenic. Excluding medicated soaps, the notable allergenic ingredients of soap are dyes, perfumes and essential oils. I believe the role that soap plays in the causation of dermatitis of the hands in housewives and others concerns the defatting action of soap but more especially the prolonged exposure to soap as an alkaline substance. Burckhardt's studies suggest that the eczematogenous action of soap is inherent to impairment of the function of the skin to neutralize alkali, whereby an alkaline reacting substance becomes an irritant in a concentration to which the normal skin does not react. Burckhardt called this toxic hypersensitivity. This serves, I believe, in explanation of the eczematogenous action of all alkaline cutaneous detergents. If a positive patch test to soap is an allergic one, it should be positive in a wide range of dilution of soap. It is desirable in a study of patch tests to soap to perform also tests such as Burckhardt outlined in the direction of determining if the function of the skin to neutralize alkali is impaired. In this way it could be determined whether a positive patch test to soap correlates an impaired function of the skin to neutralize an alkali. An important phase in prevention of dermatitis caused by prolonged exposure to soap, indeed to any alkaline cleanser, is to immerse the hands at the end of the work day in a 1-3 per cent solution of acetic acid, indeed vinegar. The authors studied the use as soap substitutes of some organic preparations that have wetting, penetrating, emulsifying or detergent properties. I believe that all such preparations exert a defatting action. The authors call attention to this and therefore advise their use in a diluted form. The authors have made a notable contribution in mixing these detergents in a nonirritating, water soluble substance, urea, in order to employ them in cake form. They have observed dermatitis—an allergic reaction resulting from an alkyl sulfonate and also from a sulfonated oil. Further use of these detergents will be required in order to determine whether the newer organic compounds are more allergenic than the sulfonated oils. An ideal cutaneous detergent should be neutral or on the acid side (about pH 5); it should not have a defatting action and should have no or a low allergenic property. I believe that the balance now is in favor of the sulfonated oils.

DR. MARION B. SULZBERGER, New York: I don't think that any dermatologist has doubted for the last two decades that many eczematous eruptions of various types are either caused by or aggravated by the use of soap. It is the practice of the majority of dermatologists with whom I have conversed on the subject to tell the patient with eczematous dermatitis of the hands that soap is bad for the skin. In my practice, I have emphasized this more strongly by telling the patient that for his particular hands "soap is poison" and that he must avoid soap the way he would avoid a real poison if he wants to get well. There are other dermatoses in which soap may be very harmful. For example, senile pruritus is certainly one such dermatitis; winter itch and bath itch are others, and notably infantile eczema and atopic dermatitis (disseminated neurodermatitis) in the child and in the adult are often harmed by soap. And in infantile eczema I believe the role of soap is just as important as it is in dermatoses of the hands. There is a large group of important skin disorders in which soap must be avoided. How does the soap act? I am inclined to agree with the authors and others who believe that there is a combination of alkali damage plus irritation or sensitization to some other ingredient in the soap. That is, the alkali damage to the skin more or less paves the way for the other effects of perfumes, of fillers, of fatty acids and of other substances which may be contained in the soap and paves the way for sensitization or irritation from other substances not contained in the soap, such as occupational substances and other contact agents. The chief problem for years has been to find a satisfactory soap substitute. None of the soap substitutes submitted for my trial among patients have been entirely satisfactory for several reasons aside from the possibility of their also causing irritations and sensitizations on their own part. One objection is that they have not as yet been put up in cake form. The cake is an actual convenience. It is difficult to get people to carry a container, as they must now do if they are obliged to use soap substitutes. Another reason is that these

substitutes cause no foam. People connect the foaming with the detergent effect, although of course this is not a necessary association. A third reason why patients do not like the present soap substitutes is that none of them leave that slippery feeling which people have been accustomed to associate with the feeling of cleanliness and of softness of the skin and which is due to alkali damage of the surface of the skin. The next difficulty is that these soap substitutes are not obtainable everywhere. People don't want to have to go to certain stores to get things. The fifth difficulty is the price. The soap substitutes are comparatively expensive at present.

DR. HERMAN GOODMAN, New York: The paper is restricted to conditions found in housewives. It is not impossible to find similar reactions in men. It is not the soap or substitute for soap which is at fault; the skin is the wrong soil for the soap. There are two kinds of skin. To bring the matter into the realm of soap making, I classify skin first as of the oil in water emulsion type. Normal soap is also of the oil in water emulsion type. If the patient's skin and the soap are both of the oil in water emulsion type, the patient's skin can tolerate the soap. Oil in water soaps are of two varieties: One is soluble, formed with fatty acid by univalent salts, as potassium, sodium and ammonium. The insoluble oil in water soaps are formed with fatty acid by bivalent salts, as magnesium and calcium. Many persons who tolerate soluble oil in water soaps react by evidence of skin irritation to insoluble oil in water soaps. It is held that the insoluble oil in water soaps are irritants to the skin of such people. The second kind of skin is regarded as the water in oil emulsion type, which does not tolerate oil in water phase soap. Every grandmother advised the substitution of oil for soap if a child did not tolerate soap and water. Substitution of oil in water emulsion type soap for another oil in water emulsion type soap does not relieve the person whose particular skin is of the water in oil emulsion type. Certain superfatted soaps were once available which purported to be in effect water in oil emulsion type. Many creams offered as a substitute for oil in water emulsion type soap are likewise oil in water emulsion type creams and are in effect conventional soap with high water content sold in a jar rather than the dehydrated oil in water emulsion type soap sold in cake form. The physician can learn only by trial and error whether his patient has the skin of the oil in water emulsion type or of the water in oil emulsion type.

DR. JOSEPH MULLER, Worcester, Mass.: On the practical side of this paper the question is what to do with the patient who has to use soap. In my experience it makes a great deal of difference how the soap is used, not only what soap is used. This holds true only with the patient who is in contact with soap for a comparatively short time. With the usual way of washing hands, for instance in hospitals, by nurses and orderlies and doctors, the trouble is that the soap remains on the hands after the washing is over; it is not thoroughly rinsed off. This way the irritating effect of soap lasts for a long time instead of a minute or two, as it would with proper rinsing. I think that, if we advise our patients to rinse their hands with lukewarm water very carefully after using soap, the milder cases of soap dermatitis will disappear without the use of substitutes instead of soap. The important thing is good rinsing with lukewarm water. Cold water does not dissolve the average soap and, of course, hot water causes inflammation by itself.

DR. ADOLPH ROSTENBERG JR., Washington, D. C.: Are most of the dermatitides which result from contact with soap predicated on a specific sensitization or on some other mechanism? This is an important point because it will shed light on broader questions of skin irritations and possibly lead to an understanding of some mechanisms of skin irritation which are poorly understood. I do not doubt that some cases of dermatitis which arise after contact with soap are predicated on a specific sensitization, but the weight of evidence points to the fact that the majority arise as a result of some other mechanism. In a paper presented before this section a few years ago by Dr. Sulzberger and myself on an analysis of patch tests, we reported that we had found a much greater incidence of positive patch tests to soap in atopic dermatitis than in cases of dermatitis venenata in which we had found the specific etiology. What does this mean? To me it is inconceivable that atopic dermatitis is predicated on a sensitization to soap. From all we know

of atopic dermatitis, it is not predicated on the epidermal type of sensitization at all. All the high incidence of reactions to soap in that type of dermatosis can mean is that those individuals have some functional abnormality of their skin which does not allow them to tolerate soap as do their fellow men. There is a great deal of ancillary evidence as well to show that their skin is not the same as the skin of other individuals. But what does the fact that the cases of dermatitis venenata did not give an inordinately high percentage of positive reactions to soap mean? Of course it can be argued that we just happened to fall on a group of individuals who had never become sensitized to soap. But assuredly those individuals had the opportunity to become sensitized to soap. It has also been shown that individuals who become sensitized to one eczematous allergen are much more prone to become sensitized to some other eczematous allergen. In view of those facts and of the work done by Burckhardt, all the evidence seems to point to the fact that reactions from soap are predicated on a mechanism other than a specific allergic sensitization. While I do not believe that this mechanism is understood at the moment, the importance of realizing this is to point out the direction in which further work should be continued.

DR. HOWARD J. PARKHURST, Toledo, Ohio: The authors mentioned that there were fewer of these cases in summer. That seems in line with observations of Hansen, who examined the p_{H} of the skin of the forearm after it had been washed for two minutes with toilet soap. He found that ordinarily it took three and one-half hours for the p_{H} of that area to return to normal, but only one-half hour if the patient was perspiring freely. Most observers feel that the free alkali itself is probably not an irritant but that it apparently prepares the skin for the action of various potential irritants such as those ingredients of soaps which the authors mentioned. I think we are agreed that some cleansing agent has to be used. Soaps or cleansing agents cannot be avoided, and I think we are also agreed that the offenders are a few of the stronger modern laundry soaps and the hard water toilet soaps chiefly, and also the water softeners. Sulfonated oil and sulfonated alcohol are of some value as substitutes, but I don't feel that they are as good cleansing agents as the soaps, and it has been shown that they themselves are occasional sources of irritation. Therefore I feel that it is better to substitute some milder soap. All are familiar with a number of them. And to use a better technic of washing or handling the soap, as has already been brought out in this discussion, in my experience has been all that has been required.

DR. DONALD M. PILLSBURY, Philadelphia: During the past year Livingood and myself have in about 200 cases employed various soap substitutes, wetting agents of various types incorporated in oils and with higher alcohols. We can confirm the value of such substitutes in cases of dermatitis of the hands, whether or not they seem to be due primarily to soap. They have been used in infantile eczemas and in ichthyosis. These compounds will often alone produce a satisfactory clinical improvement in ichthyosis which appears during the winter months. We have not encountered any particular evidence of allergenic capacity. I think that the final story as regards their allergenic capacity will not be told until a considerable number of persons have used these compounds over a long period of time.

DR. JAMES W. JORDON, Buffalo: It has been our impression from patch tests and other studies that the alkali present in soap is not the most important factor in soap dermatitis. The alkali, however, does pave the way by its degreasing action on the skin in permitting other allergens to sensitize the skin. If alkali alone were the cause of soap dermatitis, sulfonated alcohols would solve the problem since they contain no alkali and are neutral in reaction and do not hydrolyze. The sulfonated alcohols in undiluted form produce excessive dryness of the skin so that it is necessary to incorporate them in inert bases. So far, we have not prepared an ideal preparation but have been using a compound containing 10 per cent lauryl sulfoacetate, 88 per cent urea and 2 per cent unsulfonated lauric alcohol. The lauric alcohol causes a smooth satin-like feeling to the skin following the use of the compound. I agree with Dr. Sulzberger that there are many dermatoses in which soaps play an important part such as senile pruritus, winter itch and bath itch. We also

believe that many low grade eczemas are due to sensitization to insoluble soaps present in laundered materials. We agree with Dr. Goodman that the type of skin is of some importance in soap dermatitis. People with oily skins will tolerate soap better than those with dry skins. Ichthyotic persons tend particularly to develop soap dermatitis, sometimes in primary irritation and sometimes because of sensitization to ingredients of the soap. We believe that soap dermatitis is more common in the winter time because the skin is drier at that time. Regarding patch tests with soap solutions, we did 2,600 different tests some time ago, using various dilutions of soap, and our results do not agree with those of Dr. Rostenberg. We found that 50 per cent of all patients who had eczema developed strongly positive patch test reactions to one or more of the soaps to which they were tested. Furthermore, we found that most patients did not react to all of the soaps employed but usually to two or three, in spite of the fact that the alkali content of the soaps employed was approximately the same. This indicates that it was not the alkali present in the soap but perhaps a fatty acid or something else added to the soap that produced the reaction. We have used the so-called milder soaps and superfatted soaps and have been unsuccessful in controlling soap dermatitis.

SOME FACTORS AND OBSERVATIONS ON PREPARATION AND PRESER- VATION OF DILUTE PLASMA

JOHN ELLIOTT, Sc.D.

G. F. BUSBY, M.D.

AND

W. L. TATUM, M.D.

SALISBURY, N. C.

The importance of whole blood transfusion as a therapeutic agent is well recognized and established. The important role played by plasma in transfusion has not been fully appreciated. In the past the major criterion for transfusion in the majority of institutions has been the need for erythrocytes. From the ever increasing reports in the literature it is becoming apparent that the therapeutic value of transfusion in the treatment of many diseases is derived largely from the plasma rather than from the red cells. Certainly in shock without hemorrhage,¹ in burns,² for restoration and maintenance of plasma protein,³ for administration of antibodies⁴ and even in severe hemorrhage⁵ the effectiveness of plasma cannot be questioned.

The necessary delay in securing a suitable donor or in cross matching "banked" blood, if it is available, vitiates the effectiveness of transfusion in dire emergencies. Blood transfusions can be carried out successfully in a great majority of hospitals and, under favorable circumstances, in the home. Yet there are a number of small institutions without adequate facilities for matching and transfusing blood. Transfusion in the home is, at best, tedious and complicated. The need is as great in the one institution as in the other. There-

From the laboratory of pathology, Rowan Memorial Hospital.
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3. McKenzie, B. W., and Elliott, John: Blood Plasma Proteins in Pyogenic Infections, *South. Med. & Surg.* **97**: 7-10 (Jan.) 1935.
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fore the need for an effective immediately available substitute for whole blood makes itself apparent. To be most effective, stability and ease of administration, without special preparation at the time of need, are of paramount importance. We have endeavored to show in other publications⁶ that plasma is such a substitute. Reports in the literature of its extensive use in many different types of cases clearly indicate its effectiveness. Its simplicity of administration and freedom from reactions enhance its usefulness.

In 1936 we suggested the use of blood plasma as a substitute for whole blood.⁷ At that time we were unable to find a method for preparing plasma in sufficient quantities for clinical use. Our first problem was therefore to devise a suitable method of preparation. For a method to be satisfactory for practical clinical use it was of the utmost importance that it meet certain criteria, namely:

1. Ease of maintaining an aseptic technic.
2. Universal adaptability.
3. Simplicity (plus economy in raw material, time and effort).
4. Ease and safety of storage and transportation.

Our first concern was the sterile collection of blood. After much experimentation we became convinced that the most satisfactory collecting flask for whole blood would be one containing an anticoagulant in a vacuum. This would permit the aseptic collection of blood in an entirely closed system. The result of this experimentation has become commercially available.

A technic for the preparation of plasma was developed and a similar vacuum container adapted to its preservation. With the development of this equipment and technic the practical preparation of plasma can be successfully carried out even in small laboratories. It can be administered with the simplicity of other parenteral fluids in any institution or in the home. Storage under widely varying conditions has not influenced its usefulness, and transportation for long distances has been found possible.

Our original idea in 1936 was to suggest the preparation and preservation of undiluted, uncentrifuged plasma to be stored without a preservative. It was not long, however, until we found precipitation occurring. In addition, plasma so prepared proved difficult to administer. Often our preparations were unusually cloudy owing to the presence of large quantities of fat. This was particularly true when our donors had eaten heartily. Cloudiness often suggested contamination, making bacterial cultures imperative before administration.

We soon found that, by centrifuging, clear plasma could be obtained, and by using fasting donors the plasma would be relatively free of fat. However, this clear plasma developed a precipitate after a few days storage. Gross precipitation was delayed by dilution with physiologic solution of sodium chloride to approximately the original blood volume. It was noted that, when plasma was prepared from whole blood less than twenty-four hours after collection, precipitation often occurred relatively soon, even after dilution. This did not occur when older blood was converted. Consequently, we are now storing all blood before it is converted. Through personal communication we are under the impression that an explanation for this difference in behavior will shortly be forthcoming.

Hemolysis is insignificant in plasma prepared from blood stored for periods up to five days.⁸ Agitation of older blood results in an undesirable mixing of hemoglobin with the plasma. This can be prevented by transferring blood from the original container to centrifuge bottles without shaking.⁹ Our first preparations were made by aspirating the supernatant plasma from the centrifuge bottle into the storage container immediately after centrifugation. However, as our centrifuge came to rest, invariably there was a swirl of cells through the supernatant plasma. When the supernatant plasma was aspirated, these cells came with it. These few cells, though not sufficient to cause reaction, were eventually destroyed, producing undesirable color and increased precipitation. This difficulty was eliminated by placing the centrifuge bottles in the refrigerator for twelve hours after centrifugation before the supernatant plasma was aspirated.

By means of this technic and equipment, complete asepsis has been achieved without resorting to special precautions. One hundred and fifty consecutive tests for sepsis on plasma prepared without a sterilizing preservative yielded negative cultures. Some of these specimens of diluted plasma had been stored at room temperature for eighteen months. In spite of this record we felt that additional safety could be assured by the addition of merthiolate as a preservative. We have used as a routine 5 cc. of a 1 per cent solution in 500 cc. of diluted plasma, giving a final concentration of 1:10,000. The low toxicity of merthiolate and its effective germicidal action in protein mediums¹⁰ suggested its use. Observations in the literature, clinical trial and personal communication would all seem to justify this action. Plasma thus protected was inoculated with staphylococci and streptococci, stored at room and at refrigerator temperatures and was found to be sterile when cultured twenty-four hours after inoculation. Four bottles of plasma containing merthiolate in a concentration of 1:10,000 have been exposed to the air at room temperature for periods up to seven months. Frequent aerobic and anaerobic cultures have been negative.

The electrophoretic protein patterns of a year old diluted plasma were studied by Drs. Scudder and Longworth of the Rockefeller Institute. They found some changes in the albumin and in the alpha, beta and gamma fractions of the globulin. The significance of these changes is not apparent. Chemical studies were made at Presbyterian Hospital in New York on six specimens of diluted plasma preserved from forty-five to 145 days. These studies included determinations of potassium, sodium, ammonia, hydrogen ion concentration and sterility. They gave no evidence of deterioration with age. Hydrogen ion concentration studies on diluted plasma at Duke University gave a mean reading of 7.6.

A variety of diluents have been tried and the one which has been generally used is physiologic solution of sodium chloride. However, recent studies seem to indicate that a solution of 5 per cent dextrose in physiologic solution of sodium chloride possesses certain advantages over the simple saline solution. Preliminary observations indicate that it possesses greater inhibitory power as to the formation of color and precipitates in plasma stored at room temperature for some period of time.

8. Much of our plasma is salvaged from outdated blood from the blood bank. Fifty-eight specimens of blood have been shipped to us by bus or mail. All these have been converted to very clear, satisfactory plasma.

9. Containers will soon be available which will not require this transfer.

10. Powell, H. M., and Jamieson, W. A.: Merthiolate as a Germicide, *Am. J. Hyg.* 13: 296-310 (Jan.) 1931. Literature, Eli Lilly & Co.

6. Tatum, Elliott and Nessel.¹ Elliott,² Elliott, Tatum and Nessel.³
7. Elliott, John: A Preliminary Report of a New Method of Blood Transfusion, *South. Med. & Surg.* 98: 643 (Dec.) 1936. Elliott, John; Tatum, W. L., and Nessel, N. M.: The Use of Plasma as a Substitute for Whole Blood, *North Carolina M. J.* 1: 283-289 (June) 1940.

Objections to the dextrose content have been raised on the ground that it might slow absorption when given extravascularly. Frequent intramuscular administrations have been given without any obvious difference in rates of absorption.

In the course of our studies it has frequently been noted that when dilute plasma has been prepared containing hemoglobin and stored at room temperature there was a marked change in color drifting through various shades, finally stabilizing as a muddy, chocolate colored solution. An absorption spectrographic study identifies this shifting color as being due to the formation of methemoglobin. The addition of either sodium cyanide or sodium hydrosulfite rapidly converts the chocolate colored solution back to a clear pink, which is readily recognized as being a dilute solution of hemoglobin. These observations would seem to give positive evidence that the hemoglobin is oxidized to methemoglobin. It is interesting to note that as low a concentration as 0.2 per cent methemoglobin can be responsible for a very unsatisfactory looking product.

While the precipitate previously mentioned has not been positively identified, the studies to date indicate that it is essentially proteinaceous in character. After separation and washing three times with distilled water it gives characteristic protein reactions, is soluble in citric acid solution and remains in solution at a p_H of 5. It is appreciably soluble in dilute alkalis. Colorimetric tests for albumin and globulin indicate their presence in only minute quantities. Nitrogen determinations on this precipitate dried at 60 C. gave a value of 12.48 per cent. The addition of calcium chloride to the supernatant dilute plasma from which

Approximate Age of Plasma When Administered

1 Day to 1 Week	App. 2 Weeks	App. 3 Weeks	App. 4 Weeks	App. 6 Weeks	App. 8 Weeks	App. 12 Weeks	App. 25 Weeks	App. 36 Weeks
22	3	1	2	3	5	8	6	3

the precipitate had been removed by centrifugation results in no clot formation. While this precipitate has not been positively characterized, as a result of the foregoing observations it would seem reasonable to assume that it is fibrin. We are continuing our studies in an effort to identify this material positively.

Storage at refrigerator temperature is unquestionably optimum for plasma just as it is for whole blood. We have purposefully used plasma stored at room temperature for long periods of time to prove that it will not deteriorate, develop toxic products or lose its therapeutic effectiveness. We, of course, recognize the diminution, if not loss, of antibodies under these storage conditions and, consequently, make no claim as to its efficacy in the field of immunology after such storage. This study included fifty-three administrations. No reactions occurred. The storage period ranged from one to 270 days.

We wish to make a special note of the fact that five of the specimens of plasma traveled 17,000 miles in the United States and South America during a period of two months, starting the latter part of September 1939, and were subsequently stored in our laboratories for an additional four months. At no time during this period were these specimens protected from weather or climatic changes. A moderate precipitate and change in color were noted. Aerobic and anaerobic test cultures of two bottles were found to be sterile. The others

were not cultured. Their therapeutic effectiveness is illustrated by the following case:

A middle-aged Negro was admitted to the Rowan Memorial Hospital, Salisbury, N. C., moribund and suffering with extensive gangrene of the penis, scrotum and lower part of the abdominal wall. He was unconscious and showed all the signs of having an advanced circulatory failure. Survival for more than a few hours was not expected. He was given within thirty hours eight bottles of diluted plasma, each representing the plasma from 500 cc. of blood. This included the five bottles previously mentioned and an additional three bottles which had been exhibited at several medical meetings and had been stored at room temperature for more than nine months.

Restoration of blood pressure, lowering of temperature, decrease in pulse rate, increased urinary output and a return to consciousness followed. Within twenty-four hours he was able to take nourishment and survived eighty-four hours. The recipient's blood belonged to blood group A and all the plasma was from blood belonging to group O. No unfavorable reaction of any kind occurred during this therapy.

Our observations have been confined to the preparation and preservation of dilute plasma. We have had no experience with the lyophile method of Florsdorf and Mudd,¹¹ the concentration method of Thalhimer¹² or the drying in a vacuum at body temperature method of Edwards, Kay and Davie.¹³ All these methods have been reported as being highly satisfactory. The observations herein reported would not be applicable to their procedure.

CONCLUSION

In the past several years we have given 482 infusions with dilute plasma and have had but three reactions. In each instance in which untoward results were experienced they were unquestionably identified as being pyrogenic and caused by improper cleansing and preparation of the accessory equipment.

It is perhaps noteworthy that we have given plasma by means of the intravenous, subcutaneous and intramuscular routes, in some conditions with apparent equal clinical benefits. All plasma has been given with a recipient set containing a stainless steel filter which contains a 200 mesh stainless steel filtering cylinder. This cylinder removes all particulate matter of a magnitude greater than 74 microns in diameter.

A clear, dilute plasma in which little or no precipitate forms can be prepared by observing a few, simple precautions, namely:

1. The use of fasting donors.
2. The storage of whole blood for more than twenty-four hours before being converted to plasma.
3. The avoidance of shaking whole blood before it is transferred to centrifuge bottles.
4. Refrigeration for approximately twelve hours to permit sedimentation of red cells not removed by the centrifuge.
5. The use of a diluent containing dextrose.
6. The addition of merthiolate to a concentration of 1:10,000.

Dilute plasma prepared by our method is an effective substitute for whole blood. It is easily prepared. It is adaptable to all institutions. It has been administered safely and effectively after storage for periods up to nine months. Clinical use after storage under widely varying conditions, both in the home and in the hospital, indicates that it is a valuable and safe therapeutic agent.

11. Florsdorf, E. W., and Mudd, Stuart: *J. Immunol.* 29: 389 (Nov.) 1935.

12. Thalhimer, William: A Simple Inexpensive Method for Concentrating Serum Under Sterile Conditions, *Proc. Soc. Exper. Biol. & Med.* 37: 639-641 (Jan.) 1938.

13. Edwards, F. R.; Kay, J., and Davie, T. B.: The Preparation and Use of Dried Plasma for Transfusion, *Brit. M. J.* 1: 377 (March 9) 1940.

Clinical Notes, Suggestions and New Instruments

ACUTE APPENDICITIS AND PINWORM INFESTATION OCCURRING CONCOMITANTLY IN THE SAME FAMILY

VICTOR MAYER, M.D., WARREN, PA.

The etiologic relationship of infestation with *Oxyuris vermicularis* to acute appendicitis in children has been shown frequently, though there is no ready agreement as to whether the parasite is to be considered the direct agent or concomitant and coincidental.

Dean Lewis,¹ in discussing this problem, finds that the parasite is found in apparently normal appendixes, in the submucosa as well as between. He suggests the possibility that the parasites often penetrate the mucosa and that this may be the starting point of an acute attack.

While infestation of entire families and institutional groups is not uncommon and while a so-called family tendency to acute appendicitis is known, the combination of the two in one family over a short period of time bears reporting.

The family is of Italian descent and lives in poor circumstances. The mother, Mrs. V. T., aged 34, was first known to be infested at the time of delivery of her seventh child in 1935. At this time the diagnosis of *Oxyuris* infestation was made on gross examination when she passed many parasites at delivery and in the puerperium. She received subsequent treatment for this but was not followed up.

The members of the family are Mr. T. aged 40 (?), Mary aged 15, Tony aged 14, Charles aged 12, Frances aged 9, Anna Jean aged 8, Nicholas aged 4 and Nicholas aged 6 at the time of his death eleven years before. (The cause of death cannot be determined exactly—said to be appendicitis.)

REPORT OF CASES

The following are the members of the family who have been seen so far:

CASE 1.—F. T., a girl aged 9 years, was admitted Dec. 13 1939, with a history of "pain in the stomach" beginning on the evening of Dec. 11, 1939. The next day she complained of pain in the right side. This persisted to the time of her admission. There was no nausea or vomiting associated with the attacks of pain.

The past history was negative. (It was later learned from the patient that she had perianal itching, particularly at night.)

The patient had mild pharyngitis. The heart and lungs were normal; the liver and spleen were not palpable. There was tenderness over McBurney's point and localized rigidity over this area. Pressure on the left upper quadrant produced pain in the right lower quadrant. The temperature, pulse and respiration were normal.

A blood count showed 4,850,000 red cells, 9,300 white cells and hemoglobin content 100 per cent; differential: polymorphonuclear leukocytes, segmented 36 per cent and nonsegmented 2 per cent; lymphocytes 54 per cent, eosinophils 6 per cent and transitionals 2 per cent. The urine was acid, with a specific gravity of 1.007, and reactions for albumin and sugar were negative. Microscopic examination revealed occasional epithelial cells, from 12 to 15 red blood cells per high power field, no casts and an occasional leukocyte. Eosinophils were not explained by the studies done. There was no urinary complaint. Because of the persistence of pain and tenderness that the patient suffered on admission, an appendectomy was done December 14. At operation the mother's history was recalled. The appendix was long, inflamed and retrocecal, with dense adhesions, particularly at the midportion, producing sharp angulation.

When the appendix was opened, a foul odor was obtained and it was found to be full of pinworms actively motile in a mucopurulent fluid.

A specimen of urine taken on the first postoperative day showed very few red blood cells and an occasional epithelial cell; otherwise it gave negative results.

The patient was discharged on the ninth postoperative day after a course of antonin and mild mercurous chloride. When she was seen two months later she had no further complaint.

CASE 2.—C. T., a boy aged 12 years, a brother of patient 1, was admitted Jan. 8, 1940, approximately two weeks after his sister's discharge, with a history of pain in the right side for two days. He had a nasal discharge and perianal itching at night. There was no nausea or vomiting. The past history was negative.

The patient had acute rhinitis and acute myringitis. The heart and lungs were normal. There were tenderness in the right lower quadrant of the abdomen over McBurney's point as well as over the ascending colon and slight rebound tenderness at the right lower quadrant. There was no demonstrable rigidity.

A blood count showed on admission 9,400 white cells; differential: polymorphonuclear leukocytes, segmented 40 per cent, nonsegmented 1 per cent; lymphocytes 46 per cent, eosinophils 13 per cent.

Analysis of the urine was negative. The temperature, pulse and respiration were normal.

Knowing the history of family infestation, a conservative plan of treatment was instituted. Immediately after admission hypertonic saline enemas were given and particular attention was paid to the hygiene of the hands and the perianal region.

On the day after admission, January 9, a blood count showed hemoglobin content 92 per cent, 6,450,000 red cells, 18,500 white cells; differential: polymorphonuclear leukocytes, segmented 74 per cent, nonsegmented 8 per cent; lymphocytes 18 per cent, eosinophils 2 per cent. The temperature, pulse and respiration were normal. There was no increase in the complaints concerning the abdomen. January 10 a blood count showed 10,300 white cells; differential: polymorphonuclear leukocytes, segmented 64 per cent, nonsegmented 4 per cent; lymphocytes 28 per cent, eosinophils 2 per cent, transitionals 2 per cent.

Ova were not demonstrated in the feces. Mucus and blood were present.

Because of the persistence of the abdominal complaint and improvement of the infection of the upper respiratory tract, an appendectomy was performed the next day and revealed the appendix with a short meso-appendix injected, full and tense. Parasites were not found in the opened appendix.

Convalescence was interrupted by a hematoma in the incision. The patient was discharged on the fifteenth postoperative day.

CASE 3.—T. T., a boy aged 14, was admitted on the evening of Feb. 5, 1940, approximately two weeks after discharge of his brother C. T.

Approximately five days prior to admission the patient had a "stomach ache" but no nausea or vomiting, and his appetite was poor. This persisted until the day previous to his admission, when he began to complain of pain in the right side. No nausea or vomiting developed. Pain persisted until the time of his admission. There was a questionable history of nocturnal perianal itching. The patient had fallen several years previously and suffered injury of several fractured ribs.

The patient was underdeveloped with adenoid facies. The heart and lungs were normal. There was abdominal tenderness over the right lower quadrant and localized rigidity in that area. The temperature, pulse and respiration were normal.

A blood count showed on admission 7,400 white cells; differential: polymorphonuclear leukocytes, segmented 42 per cent, nonsegmented 4 per cent; lymphocytes 52 per cent, basophils 1 per cent, eosinophils 1 per cent.

Operation was postponed because there was improvement in the patient's condition. A blood count the next morning showed 5,100,000 red cells, 8,350 white cells, with the following differential: polymorphonuclear leukocytes, segmented 40 per cent, nonsegmented 6 per cent; lymphocytes 48 per cent, eosinophils 5 per cent, basophils 1 per cent.

Analysis of the urine showed a faint trace of albumin and occasional leukocytes.

Because of recurrence of symptoms and abdominal manifestations the patient was operated on. The appendix was found

From the Warren General Hospital.

1. Lewis, Dean: *Appendicitis in Children*, in Cecil's Textbook of Medicine, ed. 4, Philadelphia, W. B. Saunders Company, 1937, p. 766.

injected, 3 inches long, full and tense. It was freely movable. When the appendix was opened many live pinworms were found present.

Convalescence was uneventful. The patient was seen one month after discharge and was free from complaints.

In view of the presence of infestation in the family two of the remaining children were seen and blood counts were made. They were free of any complaint.

A blood count of M. T., aged 15, on February 13, showed 8,200 white cells; differential: polymorphonuclear leukocytes, segmented 51 per cent, nonsegmented 1 per cent; lymphocytes 46 per cent, eosinophils 2 per cent.

A blood count of N. T., aged 4 years, February 13, showed 8,350 white cells; differential: polymorphonuclear leukocytes, segmented 40 per cent, nonsegmented 6 per cent; lymphocytes 48 per cent, eosinophils 5 per cent, basophils 1 per cent.

Several weeks later the father was seen in the outpatient department with the complaint of vague abdominal pain. Examination gave negative results. Laboratory studies were also negative. He was seen the next day with similar complaints and reexamination gave no positive evidence of abnormality and he was sent home.

CONCLUSIONS

Several members of the same family suffered from Oxyuris infestation and acute appendicitis concomitantly.

Pinworm infestation should be considered in acute appendicitis in children. Eosinophilia with a suggestive history of perianal itching should be looked for.

2-12 Crescent Park West.

Special Clinical Article

NEW LIGHT ON THE MECHANISMS BY WHICH NERVOUSNESS CAUSES DISCOMFORT

CLINICAL LECTURE AT NEW YORK SESSION

WALTER C. ALVAREZ, M.D.

ROCHESTER, MINN.

One of the hardest jobs I have to do several times each day is to convince a patient with functional troubles that all the symptoms are due to a nervous interference with the functions of a normal heart and a normal digestive tract. Some of these persons will, of course, have noted that their troubles followed a nervous shock or a period of overwork, insomnia, anxiety or sorrow, and for them it will be easy to accept my diagnosis and my suggestion that they see first what the effects of reassurance and a rest will be; but others who have broken down nervously without obvious cause will be hard to convince. If to these persons I do not give plausible explanations for their symptoms, using simple speech and simple illustrations, and if I cannot patiently and convincingly answer all their objections, they will only move on to consult another physician.

Often also, while talking to the physician who referred the patient, I find it hard to get him to see how unlikely it is that the symptoms complained of could all be due to the ptosis, "colitis," low blood pressure, low blood sugar or low basal metabolic rate which he found. Unfortunately, little in the training that we physicians received in college and mighty little in the information that we have since found in books and articles has prepared us for the idea that the brain, all by itself, is commonly out of order and that disturbances in the

nervous system can account for many of the syndromes that we see every day.

Obviously then the physician who wants to convince his colleagues and his patients of the functional and nervous nature of a number of common syndromes must not only make positive statements but be able to back them up with physiologic facts. Usually the patient, let us say a woman, denies that she is nervous, and commonly she is correct when she protests that she is intelligent, sensible and externally calm. She never was flighty or hysterical in her life, and she knows of no cause for a neurosis: she has a devoted husband, a happy home, ample means and nothing to worry about. Furthermore, as she says, how can her "storms" be of emotional origin when some of them come out of a clear sky, as when she is asleep or happy or perhaps on a vacation?

Symptoms Due to an Unstable Autonomic Nervous System.—Often, as I listen to the stories of these patients, it seems to me that their symptoms can most easily be explained as due to an instability of the autonomic or involuntary part of the nervous system which causes it to play disconcerting tricks on the heart, blood vessels, digestive tract, kidneys and skin. There will be attacks in which the patient will suffer with one or more of such symptoms as dizziness, faintness, trembling, jitteriness, chilliness, flashes of heat, flushing of the skin, sweating, waves of gooseflesh, palpitation, rapid or irregular heartbeat, air hunger, quivering in the abdomen, intestinal cramping, diarrhea, urticaria, bloating, frequent urination, perhaps a closing up of the nasal passages, and fear of impending disaster. Several of these symptoms are obviously those which would result from a stimulus spreading out through the sympathetic nerves and causing an outpouring of adrenin and sympathin. Others are due to stimulation of the parasympathetic nerves—the vagi and the sacral autonomies—and some are due to an outpouring of histamine, such as occurs in allergic persons.

If it is true, as physiologists now tell us, that there is a center in the brain which in health controls the autonomic nerves, the internal secretions and the involuntary organs so efficiently that we humans don't even know we have such things, then it would appear that in certain persons this center must function badly. But where is this center and why, at times, do storms come out of it?

HOMEOSTASIS AND THE HYPOTHALAMIC NUCLEI

Much of the answer we want can be found in the writings of Cannon,¹ who for years has been studying what he calls homeostasis, or the way in which the functionings of the several automatic organs of the body and the compositions of the several body fluids are kept within certain narrow limits. As he has shown, most of this vitally essential work is done by the sympathetic nervous system, which in turn is controlled by a sort of thermostat situated in the hypothalamic nuclei at the base of the brain. As Cushing once said, "Here in this well concealed spot . . . lies the very mainspring of primitive existence—vegetative, emotional and reproductive."

Here is the center that maintains body temperature by integrating the actions of the vasoconstrictors, the vasodilators, the sweat glands, the gooseflesh-making muscles, the somatic reflexes which bring about shiver-

From the Division of Medicine, the Mayo Clinic.
Read in the Medical Division of the General Scientific Meetings
at the Ninety-First Annual Session of the American Medical Association,
New York, June 11, 1940.

1. Cannon, W. B.: *Bodily Changes in Pain, Hunger, Fear and Rage: An Account of Recent Researches into the Function of Emotional Excitement*, ed. 2, New York, D. Appleton & Co., 1929.

ing and panting, and the mechanisms which regulate water metabolism and control urinary secretion. In addition, the hypothalamus has much to do with the deposition of fat, sexual development and the regulation of the breathing, the pulse rate, the cycle of sleep and waking, and the menstrual rhythm.

The Primitive Brain and Its New Control.—These are the functions we might expect this region to have when we remember that it represents the brain of those lowly ancestors of ours who crawled about in the mud millions of years ago, fighting for their food and their mates instinctively and without much will or choice. Gradually through the eons there developed those higher parts of the brain with which man now thinks and wills and remembers. In the normal adult these new higher parts keep the old lower ones under control, a control which was acquired partly during the ages and partly during the childhood of the individual. As every one knows, the small child behaves like an animal, snatching what doesn't belong to him, striking at his playmates, soiling himself, eating disgustingly and from time to time screaming with rage or fear. Only gradually does his cerebral cortex take over control as he learns to be more or less civilized. But even after he has become a gentleman, just let his cortex lose control, perhaps as he inhales some ether or after he drinks a pint of alcohol or gets into a rage, and again he may become a fighting beast. Or let the higher control be removed by a series of small strokes or by the widespread cortical degeneration that goes with senility or certain types of insanity, and again there may be left only a disgusting and irascible animal (Jackson,² Head³).

Storms That Come Out of the Uncontrolled Hypothalamus.—Interesting in this connection is the work of Cannon and Britton,⁴ Bard⁵ and others, who have shown that, if in an animal one removes the cerebral cortex so as to free from control the hypothalamus, the nuclei there will from time to time send out discharges which will cause the animal to go into attacks of cowering fear or of blind rage. Signs of great anger can be induced by merely touching the animal or picking it up, and they can be induced by stimulating the nuclei electrically. That this type of reaction can occur also in man was noted by Cushing in the case of a girl who had just had a glioma removed from the neighborhood of the hypothalamus. At the least touch she would become enraged.

At operations done on this region in men and women under local anesthesia the mere brushing away of blood may cause a maniacal reaction. Electrical stimulation of this region in conscious patients can produce a slowing of the heart, drowsiness, changes in blood pressure and respiratory rate, and feelings of anxiety. In animals such stimulation causes, besides the symptoms already mentioned, stoppage of the movements of the digestive tract.

The virus of the common type of encephalitis is particularly prone to attack the hypothalamic nuclei, and then some of the symptoms are somnolence and perhaps

later insomnia, perhaps an agitated depression, difficulty in concentrating, attacks of anxiety, loss of appetite, fluctuations in weight, perhaps chilliness, air hunger, sweating, lacrimation and salivation and, in women, amenorrhea.

A Possible Explanation for Nervous Storms.—We have here, then, in all these observations, suggestions for the explanation of many of the disturbing symptoms which we physicians see every day. Obviously, of course, much is as yet theoretical, and no neurophysiologist would think of claiming that all the symptoms described can come out of only these particular centers in the hypothalamus. There are many other centers for emotional reactions, and activities in the cortex can also be associated with disturbances in the emotions and in the behavior of the autonomic nervous system. For instance, as a tense nervous student writes an examination paper perspiration may pour out of his right axilla and water may flow copiously from his kidneys.

It seems highly suggestive, however, that when through fatigue or disease the control which the cerebral cortex normally exerts over the hypothalamic centers is removed, or when these centers are affected by local disease, storms can go out along the autonomic nerves and homeostasis can be rendered so inefficient that the victim becomes painfully conscious of the workings of his formerly quiet organs. It is known today that even the amount of fatigue that follows the loss of a night's sleep or a little dissipation or a cold can so interfere with the prompt adjustments that an aviator's nervous system must make to the lowered supply of oxygen that is encountered at high altitudes that, for a day or two, he had better not take out his ship.⁶

As every physician knows, many of the patients whose centers for homeostasis are out of control and whose autonomic nerves are misbehaving have been through enough strain, overwork or sorrow to tire the brain severely, and as C. M. Child has shown repeatedly, under adverse influences it is the higher centers that suffer first and to the greatest extent. In the badly fatigued person, then, it may be that the jitteriness, the increase in irritability, the insomnia and the tendency to flare up angrily or to worry pathologically are due largely to the escape from control of hypothalamic centers.

Equivalents of Insanity.—When the curious autonomic storms come in a person who has not been under any obvious strain I always think first of the possibility that some hereditary nervous taint which in other members of the family has produced insanity or epilepsy has in this person injured the centers that keep the involuntary nerves working smoothly and quietly. Actually one has only to study the members of a few families blighted by mental disease to find several persons with these queer stormy syndromes which are not described in textbooks and are therefore not well understood by the medical profession.

A Relation Between Nervous and Endocrine Diseases.—Another thing that through the years has impressed me about families with a nervous taint is that while some of the members have nervous troubles others have endocrine disturbances with perhaps poor sexual development, and others have curious mixtures of nervous and endocrine deficiencies. To me this is understandable now that it is known that injury to a

2. Jackson, J. H.: The Croonian Lectures on Evolution and Dissolution of the Nervous System, Brit. M. J. 1: 591-593 (March 29), 660-663 (April 5), 703-707 (April 12) 1884.

3. Head, Henry: Croonian Lecture: Release of Function in the Nervous System, Proc. Roy. Soc., London, s. B. 92: 184-209 (June) 1921.

4. Cannon, W. B., and Britton, S. W.: Studies of the Conditions of Activity in Endocrine Glands: XV. Pseudoactive Medullary Secretion, Am. J. Physiol. 72: 283-294 (April) 1925.

5. Bard, Philip, and Rioch, D. McK.: A Study of Four Cats Deprived of Neocortex and Additional Portions of the Forebrain, Bull. Johns Hopkins Hosp. 60: 73-147 (Feb.) 1937.

6. Cannon, W. B.: Stresses and Strains of Homeostasis, Am. J. M. Sc. 189: 114 (Jan.) 1935.

part of the brain, the hypothalamus, through its influence on the pituitary gland, can produce a fat sexless boy or a hairy girl who does not menstruate properly. As Foster Kennedy has said, formerly one wondered if a certain girl's failure to menstruate properly produced her psychopathy, but now it is obvious that all her troubles can come from one injury, and that to her brain. One can now see also why, in many of these cases, no amount of treatment with desiccated glands helps.

Encephalitis.—As I have already noted, the virus of encephalitis has a tendency to attack the centers in the hypothalamus, and for years I have suspected that mild infections of this type are responsible for some of the nervous breakdowns for which there is no discoverable cause, for some of the states in which the patient feels toxic and without his usual sense of well-being, and for some of the syndromes characterized by nervous storms. This idea is not so improbable now that it is known that many animals carry latent in the brain an encephalitic virus, and that many human beings carry the related herpetic virus. In these persons the least infection that lowers resistance will bring the blisters out around the mouth.

To me it is suggestive that injury wrought in the hypothalamic nuclei by a virus tends to produce either somnolence or insomnia and that these nuclei are particularly subject to depression by the barbiturate derivatives which are used so much today for the production of sleep. It is probably more than a coincidence that it is just the psychopathic or markedly fatigued person whose nerves are playing tricks on him who does not respond well to the barbiturates; in him they often produce only an unpleasant form of stimulation. Perhaps this indicates again that in these persons there is something wrong with the hypothalamic centers. Perhaps also there is a connection between this something wrong and the insomnia that so many of the patients with nervous storms complain about. Curiously, morphine often has an excitant effect on these persons similar to that which is seen regularly in cats, and now W. E. Hambourger has found that this peculiar effect comes out of the hypothalamus.

Small Intracranial Thromboses.—In older men and women another conceivable cause for an upset in the functions of the hypothalamic nuclei is injury wrought by one or more of those small thromboses that develop so commonly in cases of intracranial arteriosclerosis. Whenever in an older person a nervous breakdown comes suddenly with curious storms and a loss of all joy in life, one must strongly suspect a vascular injury to the brain. Unfortunately, few physicians think of this when, as so commonly happens, there is no weakening of arm or leg.

A Laboratory Test for a Defect in Homeostasis.—Interestingly, one can easily detect a failure in homeostasis, and one can sometimes recognize the type of person who is likely to have nervous storms, simply by comparing the results of tests made on the first day of an examination, when the patient was excited and worried, with the results of the same tests made later when the patient was mentally relaxed. Often as I have protested against the modern tendency of physicians to make diagnoses purely on the basis of laboratory reports, I have said that there is no laboratory test that will show that the patient has a psychosis, an unhappy love affair or a domineering mother-in-law, but to some extent I was wrong because often I

recognize a nervously unstable patient from a glance at the record of the examination. If I find that on two days the figures for blood pressure, temperature, basal metabolic rate, pulse rate, leukocyte count and blood sugar were practically the same I assume that the patient is fairly stable, but if I find that on the first day the figures were all abnormally high and on the next day they were normal, I am fairly certain that I am dealing with a somewhat unstable and apprehensive person.⁷

THE HORMONAL THEORY OF NERVOUS TRANSMISSION

So much for an explanation of the way in which storms can arise in the hypothalamus to plague and torment a tired or nervous or psychoneurotic or menopausal person. Now let us look at some other recent advances in physiologic knowledge which throw light on the mode of production of the symptoms after the storm starts. I refer to the recently discovered fact that, when one stimulates autonomic nerves, powerful drugs are set free at their endings, drugs which produce the observed effects on heart, intestine, blood vessels and skin.

Out of the vagal and sacral autonomic endings comes acetylcholine, which slows the heart, dilates the blood vessels and causes sweating, and out of most of the sympathetic nerve endings and out of the adrenal medulla comes adrenin, which makes the heart palpitate and sends up the blood pressure. The structures which are brought into action by the sympathetic impulses elaborate sympathin, which, in some of its actions, resembles adrenin. Other nervous influences cause outpourings of histamine, which appears now to be responsible for many of the symptoms of allergy. Interestingly, it has been shown in normal students that the injection of acetylcholine will cause changes in the mucosa of the bowel similar to those of the so-called mucous colitis which plagues most nervous women.

To me these facts are most useful because with them I can bolster up the self respect of the woman whose nerves are playing unpleasant tricks on her and frightening her badly. No longer need she feel on the defensive when her physician tells her that no organic disease can be found to explain her miseries. There can be no question now about the fact that her symptoms are real and just as disturbing and alarming as those that might follow if a physician were to inject into her veins a big dose of acetylcholine or adrenin or any other powerful drug. No one can blame her for being distressed and frightened, and no well informed person should ever think of telling her to forget it or to snap out of it. As I say to such a woman, "If I were to put a pint of whisky into you by stomach tube, no one could blame you for getting drunk, and you would have no reason for being ashamed of your behavior."

Probably luckily for us, acetylcholine is destroyed in the body almost as fast as it is formed, but unfortunately this is not true of the other hormonal substances. In ages past when a man became excited and his life depended on his ability to strike down an enemy or to beat him in a foot race, the outpouring of adrenin was useful because it helped the muscles to contract, and it delayed the coming of fatigue. During the ensuing fight or flight the adrenin was burned up, and hence it didn't stay in the man to plague him. The

7. The literature on this defect in homeostasis in the psychoneurotic is well reviewed in pages 623 to 626 of Bodansky, Meyer, and Bodansky, Oscar: *Biochemistry of Disease*, New York, Macmillan Company, 1940.

trouble today is that when persons get angry or frightened they commonly sit still and fight only with words or thoughts, and the powerful chemical hormones set free are only slowly destroyed. Perhaps now we have an explanation for the fact that exercise and physical work will often steady nervous persons and make them feel well. In women at the menopause exercise may temporarily put a stop to the flashes, perhaps by burning up the hormones that from time to time are being liberated in the body because of a poorly adjusted "thermostat."

SUMMARY

The physician's hardest job often is to convince a patient with functional troubles that all his symptoms are due to the misbehavior of nerves connected with a tired brain. The physician who expects to convince such a patient and to stop him from going the rounds of consultants' offices must have good and scientific explanations for the symptoms.

Most of the symptoms of these persons suggest an instability of the involuntary nervous system which causes it to play disconcerting tricks on a normal heart, blood vessels, digestive tract, kidneys and skin. The symptoms suggest storms running out along the autonomic nerves.

In the normal person there is a sort of thermostat situated in the hypothalamic nuclei at the base of the brain which controls the involuntary nerves and the glands of internal secretion so perfectly that the organs of the body function silently: so silently that the owner is unconscious of them. Normally this "thermostatic center" is kept in control by the cerebral cortex. When this control is removed in any way, the center works erratically, and storms go out to cause upsets in the functions of many of the organs of the body.

The "thermostatic center" can be upset by fatigue, insomnia and nervous strain. In many persons it behaves erratically because of a bad nervous inheritance, an inheritance that may have produced insanity, equivalents of insanity or abnormalities in sexual development in other members of the family. The center may be injured also by an encephalitic virus or in older persons by little thromboses due to arteriosclerosis.

When the storms come out of the brain along the involuntary nerves, at the ends of these nerves are formed powerful chemical substances which have disturbing effects on most of the organs of the body. This means that the patient need not feel embarrassed about telling of his symptoms. When the storm comes and the powerful hormones are injected into him by his nervous system, he can no more avoid having alarming symptoms than he could avoid getting drunk if some one were to force a pint of whisky down his throat.⁸

8. An introduction to the literature on this subject in addition to those already cited can be obtained from the following books and papers:

- The Interrelationship of Mind and Body (printed for the Association for Research in Nervous and Mental Disease), Baltimore, Williams & Wilkins Company, 1939, vol. 21.
The Hypothalamus and Central Levels of Autonomic Function (printed for the Association for Research in Nervous and Mental Disease), Baltimore, Williams & Wilkins Company, 1940, vol. 20.
Alvarez, W. C.: The Use of Barbituric Acid Derivatives to Differentiate a Certain Type of Neurotic Temperament, in Emanuel Libman Anniversary Volumes, New York, International Press, 1932, vol. 1, pp. 51-54.
Cannon, W. B.: The Wisdom of the Body, ed. 2, New York, W. W. Norton, 1939.
Cannon, W. B., and Rosenblueth, Arturo: Autonomic Neuro-Effector Systems, New York, Macmillan Company, 1937.
Newman, H. W.: Chemical Transmission of Nervous Impulses, Am. J. M. Sc. 198: 857-861 (Dec.) 1939.
Pearson, E. F.: Application of New Knowledge of Nerve Physiology to Clinical Medicine, Illinois M. J. 75: 227-231 (March) 1939.
Rosenblueth, Arturo: The Autonomic Nervous System, in Luck, J. M., and Hall, V. E.: Annual Review of Physiology, Stanford University, Calif., Annual Reviews, Inc., 1940, vol. 2, pp. 263-286.

Special Article

THE PHARMACOPEIA AND THE
PHYSICIAN

LEUKORRHEA

CLINICAL AND THERAPEUTIC ASPECTS

P. BROOKE BLAND, M.D.

AND

ABRAHAM E. RAKOFF, M.D.

PHILADELPHIA

This is one of the second series of articles written by eminent authorities for the purpose of extending information concerning the official medicines. The twenty-four articles in this series have been planned and developed through the cooperation of the U. S. Pharmacopoeial Committee of Revision and THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.—ED.

Basically, leukorrhea is a symptom, not a disease. Subjectively and objectively it is an expression of some underlying disorder, either functional or organic. Though the symptom may arise from a variety of constitutional or systemic conditions, it has its origin, in most instances, in some lesion of the reproductive organs. The symptom may appear at any age, as in infancy, in childhood, in the child bearing period, in the menopausal years and during senescence.

Although leukorrhea may be an accompaniment of many local and systemic diseases, it is a predominant symptom in a particular group of diseases. It must always be borne in mind, however, that leukorrhea may be the symptom which, if properly investigated, will lead to the discovery of more serious lesions, such as neoplasms, syphilis, tuberculosis and a host of other diseases.

The treatment of leukorrhea is no longer palliative but rather therapy is directed at specific disease entities. This change has been brought about by a better understanding of the various endocrine factors which control the biologic characteristics of the vagina and cervix, plus a better appreciation of the significance of various organisms present in the lower genital tract. It is now well established that the cyclic proliferation of the vaginal epithelium and the deposition of glycogen in its cells are under the direct control of ovarian estrogenic activity and that these factors in turn influence the pH of the vaginal secretion and its flora.

Thus, in arriving at an etiologic diagnosis in a case presenting an increased vaginal discharge, one or more of the following procedures are usually required:

1. Fresh wet smear examination of the vaginal and cervical discharge. Dark field examinations are sometimes necessary.
2. Gram-stained smears. Occasionally special stains may be required.
3. Routine or special cultures.
4. Evaluation of the cellular content by smear methods as an indicator of estrogenic activity. Biopsy may also be employed.
5. Determination of the pH of the vaginal and cervical secretions, either with indicator papers or, preferably, with a pH meter.
6. Biopsy for histologic diagnosis.

CERVICAL INFECTIONS

Infections of the cervix constitute a common cause of leukorrhea. The deep-branching glands of this structure form an excellent nidus for various bacteria, which may gain entrance to the genital tract and result in deep-

seated chronic infections, of which persistent leukorrhea is a prominent symptom. Cervical infections may result from primary invasion with a specific organism, notably the gonococcus, or may be caused by invasion of a variety of organisms following postpartum, postabortal or instrumental trauma.

Acute Stage.—In the acute stage of cervical infections the treatment of the accompanying leukorrhea is overshadowed by efforts to prevent the extension of the infection to the uterine cavity and the structures beyond, either by direct extension or through the lymphatics.

The treatment is entirely along medical lines and is directed toward the rest of the infected tissues, local cleanliness and the establishment of proper drainage.

Vulvar irrigations ("pitcher douches") three or four times a day afford much relief and are of hygienic aid. A saturated solution of boric acid or compound solution of iodine, 1 drachm (4 cc.) to 2 quarts (liters) of warm water, may be used for this purpose.

If the discharge is especially malodorous, glycerin suppositories containing 0.5 per cent zinc sulfate may be gently inserted into the vagina as needed. In cases of acute cervical gonorrhea the use of suppositories, or any intravaginal medication, is usually best omitted.

Sulfonamide compounds have yielded good results and have greatly reduced the time required for the treatment of acute gonorrhea. When these chemotherapeutic agents are employed, adequate facilities should be available for observing the condition of the blood before and during the course of therapy. The patient must be carefully followed by smear and culture methods for evidence of relapse, since the rapidity with which an apparent cure may be obtained often imparts a false sense of security.

Artificial fever therapy also yields a goodly percentage of early cures in cases of acute gonorrhea, but the tendency at present is to reserve this mode of therapy for "sulfanilamide failures."¹

Chronic Stage.—In chronic cervical infections a variety of methods of treatment are available, depending on the degree of the pathologic changes and the familiarity with the various methods.

The aim in treatment is the destruction of the infected glands, the establishment of free drainage and the restoration of the normal anatomic contour and histologic structure of the cervix.

Topical applications of antiseptics and caustics to the cervix are of limited usefulness except when the infection is superficial. Before applying these, the cervical canal and lips are first thoroughly cleansed with sodium bicarbonate solution (25 per cent). If the mucous plug is tenacious, it may be dissolved by the careful application of sodium hydroxide (10 per cent), or it may be coagulated with silver nitrate (10 per cent) and then removed. For painting the diseased area silver nitrate (from 10 to 25 per cent) has long been employed. The excess is removed with saline solution and the vaginal membrane protected with a tampon saturated with boroglycerin. This treatment is repeated once or twice a week until the structure returns to normal.

In the majority of cases the mechanical destruction of the infected area by the actual cautery is far more effective and whenever possible should be used in cases

dependent on endocervical infection. In cases of a superficial nature the broad cautery blade at "dark red heat" should simply sear or char the inflammatory area. With the inflammatory process extending into the deep cervical tissues with involvement and dilatation of the glands (cystic formation), cauterization should be more thorough and the affected glands themselves should be destroyed. The same result may be achieved with Hyams's conization method.

If active infection with a virulent organism is still present, spread of the infection may follow electrocoagulation and cauterization, especially if this is inefficiently done.

In chronic gonococcal infection a course of sulfanilamide therapy preceding cauterization has been recommended.

NONSPECIFIC VAGINITIS

In long-standing cervical infections, the continuous lowering of the vaginal acidity with the profuse alkaline cervical discharge may result in the displacement of the normal vaginal flora, which usually consists of gram-positive lactobacilli (Döderlein's bacilli), by a variety of other organisms. Not infrequently this results in a low grade nonspecific vaginitis. The prolonged use of

PRESCRIPTION 1.—Acid Vaginal Douche

	Gm. or Cc.
R Chlorthymol	1.3
Menthol	2.0
Methyl salicylate	2.0
Lactic acid in sufficient quantity.....to make	180.0

Mix and label: A teaspoon in 2 quarts of hot water, to be used as a vaginal douche morning and evening.

irritating chemical douches, persistent trauma, or long-standing vaginal hypo-acidity may also produce this condition.

The underlying etiologic factor should be determined and corrected. The associated leukorrhea may be controlled and the return of the normal flora hastened by the use of acid vaginal douches (prescription 1) twice daily.

Ordinary vinegar, 1 tablespoon to 2 quarts of water, as recommended by Karnaky,² may also be employed.

PRESCRIPTION 2.—Acid Vaginal Jelly

	Per Cent
R Lactose	6.000
Citric acid	0.275
Tragacanth	1.73
Irish moss	1.75
Glycerin	22.58
Boric acid	2.00
Water	100.00
.....to make	

More recently we have also employed an acid vaginal jelly, adjusted to pH 4.0 (prescription 2), 5 cc. of which is introduced with a vaginal applicator before retiring.

VAGINAL TRICHOMONIASIS

That trichomonad infection is one of the most common causes of leukorrhea is attested by the observation that a large percentage of gynecologic and obstetric patients encountered in routine practice suffer with this type of infection, which is almost always accompanied by an abnormal vaginal discharge.

1. Jones, Nathaniel; O'Hara, G. P., and Warren, S. L.: Fever Therapy for the Treatment of Gonococcal Infections in "Sulfanilamide Failures," Tr. Am. Neisserian M. Soc., 5th annual meeting, 1939, pp. 150-160.

2. Karnaky, K. J.: Normal Physiologic Douches, South. M. J. 30: 69-70 (Jan.) 1937.

The number, however, seeking treatment for the condition is dependent not simply on the presence of the parasite in the vaginal secretion but also on the social status and personal habits of the individual. The severity of the symptoms is also dependent on the accompanying bacterial invaders.

It must be acknowledged, regretfully, that a specific method of prophylaxis is as yet not forthcoming, since the medium of transmission of the disease is not completely known.

The majority of infections probably occur as the result of contamination with moist vaginal secretion of infected patients.³ It is possible that a small number of patients become infected by sexual contact, since it has been demonstrated that trichomonads are present—usually in small numbers—in the urethra or prostate of from 5 to 10 per cent of men.⁴

Prophylactically, a mild antiseptic douche, immediately following the exposure to contamination, such as bathing in still water pools, contact with contaminated tubs, toilet seats or linens, or sexual congress, may provide a reasonably safe means of protection.

With regard to active treatment, it may be said that almost any local cleansing measure will afford temporary symptomatic relief, but recurrence is almost certain to ensue unless treatment directed to destroy all the flagellates is diligently practiced and continued until the genital tract remains parasite free through at least three or four menstrual periods.

Here it may be pertinent to emphasize that, although trichomonads are easily destroyed by drying and weak antiseptics, a few survivors not reached in the vulvovaginal folds, the urethra or the cervix will rapidly multiply and in the course of from twenty-four to forty-eight hours provoke symptoms of an active nature. Therefore it is not only desirable but essential that the first three or four treatments be administered at daily intervals. These initial treatments must come in contact with every part of the lower genital canal and hence should be conducted by the physician rather than by the patient herself.

Technically, the steps of the local treatment which we carry out may be described as follows:

1. Thorough exposure and cleansing of the cervix, vagina and external genitals are essential. For this purpose, tincture of green soap, diluted twenty times with warm water, or a saturated solution of sodium perborate may be used. The latter has the advantage of effervescing when in contact with the tissues, thus aiding in the cleansing process. On the other hand, burns have occasionally been reported with the use of sodium perborate.

2. Any organisms within the cervical canal are destroyed by carrying an applicator dipped in a strong antiseptic solution, such as tincture of iodine, well into the structure.

3. The entire vaginal tract is thoroughly dried with soft cotton pledgets or with a stream of warm air, following which the speculum may be removed.

4. A nonirritating aqueous antiseptic, such as acriflavine 1:1,000, is introduced into the urethra with a

medicine dropper. The introitus and external genitalia are then thoroughly dried with cotton or warm air.

5. Following the drying process an effective trichomonadicidal agent is applied to the vulvovaginal tract. The use of antiseptic powders in a drying base have been found especially effectual. Powders of this character may be insufflated by a vaginal powder blower.

A fine grade of kaolin is usually employed as a drying base and, in some instances, this alone may overcome the disorder. It is usually necessary to combine the kaolin with a protozoacide. The pentavalent arsenicals, such as acetarsonic and carbarsone, are frequently used. Sodium bicarbonate may be added to these preparations to increase their solubility (prescription 3).

PREScription 3.—Vaginal Powder with Protozoacide

R Acetarsonic or carbarsone.....	1 part
Sodium bicarbonate	1 part
Kaolin	to make 6 parts

Mix and label: 5 Gm. to be insufflated into the vagina by the physician.

Silver picrate, 1 per cent, in kaolin is also highly recommended.

A less expensive powder, which we have found useful, is given in prescription 4.

PREScription 4.—Vaginal Powder with Zinc Sulfate

	Gm.
R Zinc sulfate	0.5
Boric acid	50.0
Kaolin	to make 100.0

Mix and label: 5 Gm. to be insufflated into the vagina by the physician.

The addition of lactose to these powders has been recommended by some workers to aid in the reestablishment of a normal flora of Döderlein's bacilli.

6. The foregoing treatment should be repeated daily for three successive days and then at intervals of three days until at least six treatments have been given.

7. Following the three initial treatments it is advantageous to have the patient employ a cleansing acid douche (prescription 1). From 2 to 4 quarts of the solution at 105 F. should be used.

8. It is often necessary to continue daily vaginal douches during the menstrual period, since, as is well known, many recurrences follow immediately or shortly after menstruation.

9. Vaginal suppositories medicated with various trichomonadicides are frequently used, but as a rule they simply control rather than overcome the infection. They are recommended as therapeutic adjuvants but not as curative agents.

10. The marital relation should not be practiced during the course of active therapy. Recurrence following coition calls for an examination of the husband to determine whether he is or is not harboring the parasite in the urethra or prostate.

11. After an initial course of treatment all local measures may be discontinued for several days, and the vaginal secretion during this time should be examined for the presence of trichomonads. No patient should be considered cured until she has passed through three or four menstrual periods wholly free from the organisms.

12. In resistant cases it is often necessary to treat the patient every second or third day through two or

3. Bland, P. B., and Rakoff, A. E.: The Incidence of Trichomonads in the Vagina, Mouth and Rectum; Evidence that Vaginal Trichomonads Do Not Originate in Mouth or Intestine, *J. A. M. A.* **108**:2013-2016 (June 12) 1937.

4. Riba, L. W.: Trichomonas Urethritis, *J. A. M. A.* **96**:2100-2102 (June 6) 1931. Ackermann, Armin: Die Trichomonas vaginalis Infektion, *Dermat. Ztschr.* **71**:132-157 (May) 1935. Bland, P. B., and Rakoff, A. E.: Trichomonas Vaginitis, in *Cyclopedia of Medicine*, Philadelphia, F. A. Davis Company, vol. 13, 1937.

three menstrual cycles. In such instances one must carefully guard against cumulative toxic effects from the prolonged use of arsenicals, silver salts, picrates and the like. It is sometimes advisable to alternate treatment with several trichomonadicidal agents.

13. In pregnancy active treatment may be indicated because of the severity of the symptoms or the "unhealthy" character of the vaginal secretion. In such instances it is best to begin treatment as early as possible, and under no circumstances should intravaginal treatment be continued beyond the thirty-sixth week of gestation.

Local treatment should be given with the utmost gentleness. The powder is insufflated without appreciably increasing the intravaginal pressure. The number of douches are reduced to a minimum and are given at very low pressure, without a nozzle.

MONILIASIS

The increase in glycogen and vaginal acidity which occurs during gestation favors the growth of *Monilia* and related yeastlike fungi. Vaginal moniliasis is therefore found far more commonly in pregnant women, in whom it is associated with thick, white, "cheesy" thrush patches encrusted on the vaginal walls and accompanied by considerable inflammation and edema of the vulva with marked pruritus.

In the treatment of moniliasis three objectives should be kept in view: first, prompt relief of the intense pruritus; second, destruction of the causative organisms, and, third, prevention of the spread of the infection to other surfaces, such as the surrounding glabrous skin or nipples or to the newborn, in whom it may cause oral thrush by contamination at the time of delivery.⁵

These objectives may be obtained by first swabbing the entire lower genital tract and vaginal canal every second day with sodium bicarbonate (5 per cent) until all secretions and thrush patches are removed and then thoroughly painting the structures mentioned with an aqueous solution of gentian violet or a solution of gentian violet plus acriflavine (prescription 5).

PRESCRIPTION 5.—Solution of Gentian Violet and Acriflavine

R	Gentian violet, 1 per cent aqueous solution.....	1 part
	Acriflavine, 0.1 per cent aqueous solution.....	1 part

Mix and label: Apply locally.

This solution does not stain as intensely and appears to be equally effective.

The solution is dried with a current of air from a hair drier or Sorenson pump while the speculum is still in situ. Although the relief afforded by the application of these solutions is prompt, they are objectionable to some patients because of staining of the bed linen and wearing apparel as they drain from the vaginal canal.

While gentian violet inhibits the growth of *Monilia*, its actual killing power is low. For this reason Hessel-tine⁶ and other observers advocate the use of some form of iodine as a more potent fungicide.

5. Hessel-tine, H. C.; Borts, I. C., and Plass, E. D.: Pathogenicity of the *Monilia* (Castellani), Vaginitis and Oral Thrush, *Am. J. Obst. & Gynec.* 27:112-116 (Jan.) 1934. Bland, P. B.; Rakoff, A. E., and Pincus, I. J.: Experimental Vaginal and Cutaneous Moniliasis, *Arch. Dermat. & Syph.* 36:760-780 (Oct.) 1937.
6. Hessel-tine, H. C.: Experimental and Clinical Therapy of Vulvo-vaginal Mycoses, *Am. J. Obst. & Gynec.* 34:439 (Sept.) 1937.

Compound solution of iodine, diluted from five to ten times with water, may be used to paint these structures instead of aniline dyes, though it is worthy of mention that symptomatic relief will not be so promptly provided.

Starting twenty-four hours after the topical application is made by the physician, the patient is instructed to use an alkaline douche (prescription 6) morning and evening.

If the vulvar skin has become infected with the fungus, more persistent treatment is necessary. In

PRESCRIPTION 6.—Alkaline Douche

	Gm.
R Zinc sulfate	12.0
Menthol	2.0
Camphor	2.0
Sodium bicarbonate	90.0
Sodium borate	90.0

Mix and label: A teaspoon in 2 parts of warm water to be used as a douche on retiring.

addition to treating the vaginal infection, the cutaneous lesions must be diligently cared for by the application of gentian violet in alcoholic solution (5 per cent) or tincture of iodine (2 per cent).

PRESCRIPTION 7.—Fungicidal Ointment

	Gm.
R Ammoniated mercury	1.6
Salicylic acid	2.0
Wool fat	12.0
Petrolatum	to make 60.0

Mix and label: To be applied to the parts affected two or three times daily.

Fungicidal ointments, as recommended by Wise and Wolf,⁷ are useful in resistant cases (prescription 7).

FUSOSPIRILLOSIS AND RELATED INFECTIONS

Vaginal infections due to Vincent's organisms or various types of *Spirillum* and *Spirochaeta* are usually associated with and favored by uncleanness. They may result from abnormal sexual practices or from autoinoculation from the mouth of women suffering with infection of the "gums." As a secondary infection it may become superimposed on other ulcerative lesions, especially those of a granulomatous character.

In cases of fusospirillosis the discharge is profuse, thick, yellow and purulent. The morbid changes in the vaginal mucosa may be pronounced. The membrane is injected and raw and presents a "raw beef" appearance. In some instances rather deep ulcerations may occur.

An infection clinically identical and probably acquired in the same way may be caused by other types of *Spirillum* and *Spirochaeta*⁸ of low grade pathogenicity such as are frequently found in the mouth. The organisms may be demonstrated by dark field examination or in smears stained with Giemsa's spirochetal stain.

Treatment.—These infections usually respond rapidly to simple local cleansing measures unless there is another underlying cause present. An effective means of therapy is as follows:

1. The entire lower genital tract is thoroughly swabbed with a saturated solution of sodium perborate,

7. Wise, Fred, and Wolf, Jack: The Pharmacopeia and The Physician: Use of Dermal Parasitocides, *J. A. M. A.* 107:1126-1132 (Oct. 3) 1936.

8. Allen, E. A.: Diagnosis and Treatment of Persistent Vaginal Discharge, *M. Clin. North America* 21:307-318 (Jan.) 1937.

which should be employed with care, since it occasionally may lead to burns of the mucous membrane.

2. An arsenical drying powder, such as that described in the treatment of trichomonas vaginitis, is insufflated into the vagina. This is repeated two or three times a week.

3. The patient is instructed to use the vaginal douche given in prescription 8 twice daily.

PRESCRIPTION 8.—*Methyl Salicylate and Sodium Perborate Douche*

	Gm.
R Methyl salicylate	2.0
· Sodium perborate	120.0
Mix and label: Two teaspoons in 2 quarts of warm water to be used as a vaginal douche morning and evening.	

The thorough and frequent daily application of neosarsphenamine, 10 per cent, in glycerin to the entire genital tract is also very effective.

LEUKORRHEA IN CHILDREN

Because of the delicate nature of the epithelial lining of the vagina, together with the neutral or alkaline reaction of its secretion, the canal itself in little girls is especially susceptible to bacterial invasion.

Infections of the vagina may be due to a specific pathogen, particularly the gonococcus, or they may be "nonspecific," caused by a variety of organisms. The introduction of foreign bodies into the vagina frequently gives rise to the latter type of infection.

Treatment.—The first essential in the treatment of gonorrheal vaginitis in children is, of course, strict isolation in order to prevent contamination of the other children in the household or institution.

Numerous therapeutic measures have been recommended and practiced in the treatment of this type of infection, though until recently none were really wholly dependable or satisfactory.

The methods one may employ may be thus enumerated:

1. Local Application of Antiseptics: Antiseptics may be effectively introduced into the vagina in the form of a water-soluble jelly. The formula suggested by Reichert⁹ has proved very satisfactory: "To 2 drachms [8 Gm.] of tragacanth ribbon is added 8 ounces [240 cc.] of an aqueous solution of the antiseptic to be used and 4 grains [0.26 Gm.] of sodium benzoate. The mixture is allowed to swell and is then expressed through cloth." Silver nitrate (from 0.5 to 1 per cent), strong protein silver (2 per cent) and various other antiseptics may be used for this purpose.

The jelly is warmed to body temperature before use and from 5 to 10 cc. is introduced into the vagina through a soft rubber catheter attached to a 10 cc. syringe.

A small, snugly fitting pad is applied and the child kept in the dorsal position for ten minutes to permit the jelly to harden.

Treatment should be repeated every two to three days and, in resistant cases, daily.

Although with persistent treatment good results may be obtained in many cases with this form of treatment, the results are not as good, as regards either prompt-

ness of cure or percentage of relapses, as are obtained with estrogen suppositories.

2. Estrogenic Hormones: Treatment with estrogens, first suggested by Lewis,¹⁰ is now accepted as a notable advance in the treatment of gonococcic vulvovaginitis.

Although the hormone may be effectively administered in a number of forms, the use of suppositories has proved to be the most convenient route and is accompanied by fewer undesirable estrogenic effects.

A satisfactory technic which may be employed is as follows:

(a) The mother of the child is instructed simply to cleanse the vulva with soap and water.

(b) A small vaginal suppository, containing from 500 to 1,000 international units of an estrogenic hormone is gently introduced into the vaginal canal at bedtime. In the majority of instances the mother may be taught to do this.

In from four to ten days a favorable response is generally noted in the vaginal smears, since large squamous epithelial cells replace the leukocytes and smaller cells as cornification occurs. The vaginal secretion becomes white and flaky and markedly acid in reaction. In this environment the gonococcus disappears.

It is generally necessary to continue treatment for four weeks, and when the response is not so prompt this may be extended to six weeks.

Repeated negative smears at weekly intervals for a period of from three to four months after treatment has been discontinued are necessary before the child can be considered cured.

If evidence of other estrogenic effects are noted, such as enlargement of the breasts, uterine bleeding, hypertrophy of the labia and growth of pubic hair, the hormone should be withdrawn and replaced with another form of treatment.

In resistant cases, or in cases in which repeated relapses occur, the cervix should be inspected with a vaginoscope or cystoscope for evidence of infection, and smears and cultures taken from this structure. The rectum should also be examined for evidence of infection. There is considerable difference of opinion as to how frequently these structures serve as foci of reinfection.

Exceptionally good results are obtained in the treatment of "nonspecific" infection with estrogen therapy. Care must be observed, however, to eliminate first the presence of an underlying factor, especially the removal of any foreign bodies.

3. Sulfanilamide: Further investigation is required before the place of sulfanilamide and its related compounds can be established in the treatment of gonococcic vulvovaginitis.

In properly chosen cases, treatment of gonococcic vulvovaginitis with sulfanilamide has given fairly good results. It is not to be recommended as a routine procedure and is perhaps most judiciously employed when other methods of treatment fail.

The treatment of gonococcic vulvovaginitis with sulfanilamide necessitates hospitalization, since careful observation, including blood counts and blood sulfanilamide levels, are of the utmost importance.

The dosage that should be employed has not yet been established to the satisfaction of all workers. A dose of three-fourths grain (0.05 Gm.) per pound

9. Reichert, J. L.; Epstein, I. M.; Jung, Ruth, and Colwell, Charlotte A.: Infection of the Lower Part of Genital Tract in Girls, *Am. J. Dis. Child.* 54: 459-495 (Sept.) 1937.

10. Lewis, R. M.: A Study of the Effects of Theelin on Gonorrheal Vaginitis in Children, *Am. J. Obst. & Gynec.* 26: 593-599 (Oct.) 1933.

(450 Gm.) of body weight is frequently recommended at the onset. This may be given in four divided doses with an equal amount of sodium bicarbonate for the first two days. The dose may then be reduced to one-half grain (0.032 Gm.) per pound of body weight for from two to three weeks, depending on the rapidity with which the smears become negative.

Smears must be rechecked at frequent intervals.

As Schauffler and his associates¹¹ and Benson¹² have pointed out in the reviews of the subject, the percentage of cures obtained by different workers has varied greatly. This has been attributed in part to ineffective dosage, although Benson states that there appears to be little relation between the amount of sulfanilamide given and the result of treatment.

LEUKORRHEA OF ENDOCRINE ORIGIN

Hyperestrogenism.—In newborn infants there is frequently present a profuse, white and flaky discharge which persists from several days to two weeks. This results from the desquamation of the vaginal epithelium, which has been overstimulated by the high blood estrogen obtained through the maternal circulation.

The moderate increase in vaginal discharge which is a physiologic accompaniment of pregnancy may be attributed to the same cause.

A similar type of noninfective leukorrhea is sometimes seen in nonpregnant women, especially young women.¹³ This is usually worse in the latter half of the menstrual cycle and is subject to periods of remission and exacerbation. Pruritus is frequently an accompanying symptom.

The discharge resembles the normal secretion in character and is highly acid (usually p_H 3.9 to 4.2). Stained smears usually reveal large cornified epithelial cells and the vaginal bacilli of Döderlein.

This type of leukorrhea is exceedingly difficult to treat. Progesterone from 2 to 5 mg. two times a week in the last two weeks of the cycle sometimes yields good results, while in other instances it may have little or no beneficial effect. An alkaline antipruritic douche (prescription 6) is of palliative value.

A similar type of discharge may develop during the period in which large doses of estrogens are being administered for other purposes.

Hypo-Estrogenism.—Atrophic changes in the vaginal epithelium are frequently seen in the postmenopausal period. Nonspecific infection with a variety of organisms often occurs and results in a purulent discharge. Pruritus is also a prominent symptom. If untreated, ulcerations and adhesions of the vaginal membranes may result.

For this condition estrogen is a specific therapeutic agent. This may be given parenterally or, preferably, in the form of large vaginal suppositories. In the beginning, one suppository, containing from 2,000 to 10,000 international units of estrone or estradiol, may be inserted nightly. After vaginal cornification occurs this is reduced to the minimum amount that will afford relief of symptoms and maintain the vaginal membrane in a healthy state.

1621 Spruce Street—2126 Spruce Street.

11. Schauffler, G. C.; Kanzler, Reinhold, and Schauffler, Caroline: Management of 256 Cases of Infection of the Immature Vagina, J. A. M. A. **112**: 411-417 (Feb. 4) 1939.

12. Benson, R. A.: The Treatment of Vulvovaginitis with Sulfanilamide, Tr. Am. Neisserian M. Soc., 5th annual meeting, 1939, pp. 136-139.

13. Cruickshank, R., and Sharman, A.: The Etiology of Leukorrhea in the Virgin, Tr. Edinburgh Obst. Soc., in Edinburgh M. J. **41**: 137-147 (Oct.) 1934. Shute, Evan: Vaginitis and Vulvitis Associated with an Excess of Estrogen in the Blood, J. A. M. A. **110**: 889-891 (March 19) 1938.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

HOWARD A. CARTER, Secretary.

WESTINGHOUSE SUNLAMP MODEL NO. ES2404 ACCEPTABLE

Manufacturer: Westinghouse Electric and Manufacturing Company, Bloomfield, N. J.

The Westinghouse Sunlamp, Model No. ES2404, containing an S-4 type lamp, provides ultraviolet radiation of an intensity and spectral distribution rendering it suitable for unsupervised use by the layman. The ultraviolet source is mounted in a reflector on an adjustable support.

Type S-4 Mazda Sunlamp bulb consists of an electric arc discharge through mercury vapor, between activated metal electrodes sealed in a small quartz capillary tube, which in turn is enclosed in a bulb of special glass and is opaque to ultraviolet radiation of short wavelengths.

Radiation passing through the quartz capillary tube is essentially that of the so-called "hot quartz" mercury arc. However, by enclosing the quartz lamp in a bulb of glass of a composition and thickness to absorb completely the intense emission lines of wavelengths shorter than about 2,800 angstroms, there remains a series of strong emission lines at 2,894, 2,967, 3,024 and 3,132 angstroms (and longer wavelengths) favorably situated in the spectral band of ultraviolet in sunlight recognized as having a specific therapeutic effect.

The S-4 Lamp is operated on the ordinary (115 volts) house lighting (alternating current) circuit but it requires an intermediary, especially designed, transformer to maintain the proper voltage and operating temperature. The approximate power used is 100 watts. In the lamps tested, on 115 volts input, the current through the lamp ranged from 2.1 to 2.3 amperes.

In order to determine whether the Type S-4 lamp complies with the Council's requirements of acceptability as a sun lamp, in addition to the data submitted by the manufacturer, spectral ultraviolet radiation measurements were made in a laboratory selected by the Council. These measurements fully confirmed the data submitted by the manufacturer showing that the radiation of wavelengths shorter than 2,800 angstroms is immeasurably small and hence these lamps qualify as sun lamps so far as spectral quality (wavelength) of radiation is concerned.

In this investigation the lamp was placed close in front of the quartz-fluorite achromatic spectroradiometer and the spectral

Spectral Intensities

Wavelength (Angstroms)	Relative Energy (Average of 3 Lamps)
3,132	7.96
3,024	2.59
2,967	1.15
2,894	0.28
2,804	0.09
Total 12.07	

intensities were measured with a vacuum thermopile. The relative spectral intensities (galvanometer deflections) corrected for absorption in the spectroradiometer are given in the accompanying table.

The radiation at 2,804 angstroms (and shorter if measurable) is about 0.75 per cent of the total of all wavelengths, including 3,132 angstroms and shorter. Mounted in an aluminum reflector the radiation at 2,804 angstroms and shorter, relative to the total, would be still lower. Hence these lamps comply with the Council's requirements for acceptability of a sun lamp for spectral quality of ultraviolet radiation.

Erythema Test: The untanned inner upper arm, at a distance of 24 inches (61 cm.) from the lamp in an aluminum reflector,

was exposed to lamp number 12 on 108 volts for intervals of two, four, six, eight, ten, twelve and fifteen minutes. A mild erythema was obtained on six minutes' exposure. The exposures of eight minutes and longer were too long—still red after three days. With a standard voltage (115 volts) and a modern reflector the exposure time for a minimum perceptible erythema would be still shorter.

The Council on Physical Therapy voted to accept the Westinghouse S-4 Sunlamp for inclusion on its list of accepted devices.

Council on Pharmacy and Chemistry

PRELIMINARY REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING
PRELIMINARY REPORT. PAUL NICHOLAS LEECH, Secretary.

PRELIMINARY REPORT ON HISTAMINASE: TORANTIL

According to reports in the literature, Torantil, an extract of intestinal mucosa of standardized histamine detoxifying potency marketed by Bayer (I. G. Farbenindustrie A. G.) for the treatment of allergic conditions and intestinal intoxications, was introduced into this country by the Winthrop Chemical Company as a brand of histaminase. The latter now markets a similar product under the same name but formerly used the provisional designation "T 360," under which identification it has been supplied to investigators in ampule form for experimental use. The concern markets the product in tablets of 5 units each, under the original name Torantil. In this form the preparation was submitted to the Council at its request.

The firm promotes Torantil as an "Antiallergic (Histamine-Detoxifying)" agent of the following description:

Extract from the mucosa of the small intestines and desiccated kidneys of hogs, containing a histamine destroying enzyme, histaminase, in an active and stable form. Biologically standardized in histamine detoxicating units, one unit being the amount which will inactivate one milligram of histamine hydrochloride during incubation at 37.5 C. for twenty-four hours. Possesses all the known properties of histaminase.

The indications for Torantil are stated as follows:

For use in the prophylaxis and treatment of allergic disorders, including asthma, hay fever (vasomotor rhinitis), urticaria, gastrointestinal disturbances, serum sickness, angioneurotic edema, atopic dermatitis, eczema, hypersensitivity to insulin, drugs and physical agents, such as cold, heat and light. Also employed in acne vulgaris.

The average initial dose of Torantil recommended by the manufacturer is from 10 to 15 units orally three times a day before meals, gradually increased to from 20 to 25 units in severe cases or decreased to a maintenance dose of from 10 to 20 units daily after clinical symptoms are controlled. Warning of possible unfavorable reaction from the use of the preparation in persons hypersensitive to hog protein is included in the firm's advertising. The firm distributes a descriptive card, "Torantil" (from which the quotations were made), three leaflets, "After Four Years of Persistent Investigations," "For Diseases of Allergy" and "Clinical Application of a New Concept of Allergy," three folders, "Effective Control of Many Allergies," "Physiologic Basis for a New Treatment of Allergy" and "Histaminase Treatment of Allergy," and a booklet, "Torantil," accompanied by a clip-sheet, "Silver Jubilee of an Interesting Discovery." The last named piece refers to the discovery twenty-five years ago by Eustis¹ that lethal doses of histamine for guinea pigs can be inactivated by incubation with the liver pulp of the turkey buzzard at 38 C. for twenty-four hours. He believed this action to be due to some enzyme, since boiling temperature resulted in inhibition of the inactivating substance.

LITERATURE

In 1930 Best and McHenry² showed that simple saline extracts of various animal organs when used fresh and untreated had the property of destroying the histamine in a

solution to which they were added. They found that almost every tissue contains a histamine-inactivating substance for which they proposed the name histaminase, because of properties characteristic of enzymes. By perfusion experiments they were able to demonstrate in the dog that the kidney and the intestine are the richest sources of histaminase. They reported a method of extraction and assay and suggested: "A convenient unit of histaminase would be the activity necessary to destroy 1 mg. of histamine during twenty-four hours' incubation at 37 C., in a phosphate buffer solution at pH 7." The authors found that the change produced in histamine during inactivation appears to be oxidative, since it is inhibited by potassium cyanide under anaerobic conditions and is accelerated by oxygen. They also found that reduction of the iminazole value parallels the degree of inactivation of histamine and suggested that rupture of the iminazole nucleus occurs in the histamine or that a complex nondialyzable compound is produced. The authors conclude as follows: "Since it has not been established that histamine is the causative agent in any pathological condition there would be no obvious clinical application of histaminase, even if it should be established that the ability of an organism to inactivate histamine can be increased by administration of the enzyme."

The firm submits thirty-six references to reports in the literature, in addition to the one just reviewed, in support of its claims that histaminase is of prophylactic and therapeutic value in a variety of allergic manifestations. A review of these and other recent reports in the literature indicates the importance of the concluding statement of Best and McHenry, just quoted. Thus far reports do not definitely establish histamine as the exciting cause of any disease. Although there is some evidence that histamine produces effects similar to the reactions which occur in certain allergic states, the theory that it is the common denominator through which a variety of exciting causes can produce asthma has not been established. Evidence that histamine, the so-called effector set free by cellular injury, may be liberated by many different agents is accumulating, but there is no conclusive evidence to prove that an excess is invariably associated with various allergic manifestations. Difficulty has been encountered because of the small amount of histamine present in the blood of patients with asthma, which until recently could be detected only by cumbersome biologic methods. There has also been difficulty in determining the mechanism by which the organism may dispose of an excess of histamine.

The presence of a protective enzyme, histaminase, in nearly all tissues of most species has been confirmed by several investigators. While most species reveal the greatest quantities in the kidney, the absence of histaminase in the kidney of the rat has also been reported. Small amounts of histamine administered slowly by vein produce none of the effects usually observed, suggesting that the blood is able to inactivate small quantities gradually. This has been shown to be due not to histaminase but rather to the red cells which take up histamine and thus prevent its physiologic activity. Rose and Browne³ have studied the question of what happens to histamine in rats when it is rapidly injected intravenously in both large and small doses. They first confirmed other reports that histamine disappears rapidly from the blood. In the rat they find that histaminase occurs only in the lung and small intestine, but within fifteen minutes after intravenous injection of histamine the tissues contain more histamine than the blood. After this time the rapidity of disappearance from the tissues occurs in the following order: blood, lung, lymph gland, liver and kidney. After thirty minutes the rate of disappearance is greater from the kidney than from the other tissues named. The authors hypothesize that, since the kidney of the rat contains no histaminase, the difference in the rate of disappearance of histamine may be due either to a transfer of histamine from other tissues to the kidney, which then destroys it gradually by another mechanism unable to gain headway with the continuous transfer until after thirty minutes, or to the slow liberation of transferred histamine from the kidney to the

1. Eustis, A. C.: *Biochem. Bull.* 4: 97, 1915.

2. Best, C. H., and McHenry, E. W.: The Inactivation of Histamine, *J. Physiol.* 70: 349 (Dec.) 1930.

3. Rose, Bram, and Browne, J. S. L.: The Distribution and Rate of Disappearance of Intravenously Injected Histamine in the Rat, *Am. J. Physiol.* 124: 412 (Nov.) 1938.

histaminase-containing tissues, where it is inactivated. It has been shown that histamine is not excreted in the urine of the rat within three hours after injection. Experiments of the authors show that adrenalectomy markedly retards the rate of disappearance of histamine from the tissues, especially the kidney. The essential importance of the study is to suggest that factors other than histaminase may defend the organism against the action of histamine.

Attempts to demonstrate the importance of histamine inactivation in combating symptoms of various allergic states have been made by a few investigators whose reports of results of treatment with histaminase may be found in the literature. Recently Karady and Browne⁴ demonstrated that histamine and anaphylactic shock were effectively prevented by parenteral preadministration of histaminase in guinea pigs given large doses of histamine or egg white after previous sensitization with this protein. Of the ten animals in each of the two untreated control groups given histamine and egg white, only seven and four given histamine and egg white respectively died. These control results further support the belief that a physiologic mechanism other than histaminase may be effective in combating an excess of histamine. Foshay and Hagebusch⁵ report the symptomatic relief of serum sickness in twenty of twenty-two patients treated with oral and intramuscular histaminase. Both these reports are based on the use of Torantil furnished by the firm.

Prickman,⁶ in the discussion of Serum Sickness: Effective Treatment and Probable Prophylaxis by Means of Histaminase, reviewed by Dr. Lee Foshay at the eleventh annual meeting (Chicago, Nov. 4 and 5, 1938) of the Central Society for Clinical Research, reported relief in only 34 per cent of twenty-six cases of vasomotor rhinitis treated orally with histaminase. He indicated that the results reflect an apparent variability in the potency of the preparation and finds a limit to the tolerance for it in one case due to food sensitivity. Distressing abdominal cramps were produced when the dose was increased beyond a certain limit. In the same discussion, Roth⁷ confirmed Dr. Prickman's observation of the variability of the potency of the material in her review of continued good results from its oral use in patients hypersensitive to cold and insulin. Foshay⁸ pointed to the probability that the product is a mixed substance and that others also have reported variance of potency in different batches of the material. He indicated that his studies were based on cases treated from a single batch of the material and that less prompt relief of symptoms is obtained by the use of enteric-coated tablets than when the preparation is administered intramuscularly.

Roth and Rynearson⁷ report further varying results with the oral use of Torantil in the treatment of prolonged local cutaneous reactions due to insulin sensitivity. Some of the failures in the twelve cases reported were attributed to a decreased potency of the particular batch of material used in the study. Laymon and Cumming⁸ administered histaminase orally and intramuscularly for from four days to three weeks in the treatment of seventeen cases of urticaria and obtained ten cures and two improvements. The average time for a cure was 10.7 days. Of the cases of atopic dermatitis treated, none were improved. Rackemann⁹ summarizes briefly the recent literature on allergy and, with reference to its relation to histamine, aptly indicates the present uncertain state of knowledge concerning histamine and so-called histaminase. Miller and Piness¹⁰ report the failure of histaminase to give unequivocal evidence that this enzyme was responsible for the relief or prevention of any of the signs or symptoms in forty-

two allergic patients treated with Torantil supplied by the firm under the experimental name T 360.

[Since the foregoing report was set in type, several additional papers have appeared in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION as follows: Among them is one by Keeney (114:2448 [June 22] 1940), in which oral administration of histaminase failed to give relief. Another article by Corper and Cohn reports that histaminase of pre-determined in vitro strength did not appreciably retard intoxication (general or cutaneous hypersensitivity) produced by an intoxicating injection of the specific tuberculo-protein in guinea pigs previously sensitized to the protein. Best and McHenry of the University of Toronto, in the correspondence note to the editor (115:235 [July 20] 1940), point out that neither their original report, nor in any subsequent publication by them, has it been suggested that the administration of histaminase might be a useful mode of therapy. They indicate that they have been unable to confirm the results of Karady and Browne in the protection of guinea pigs against anaphylactic and histamine shock with histaminase. The article by Goldberg, to which reference was made in this report, has also been published (115:429 [Aug. 10] 1940).—Ed.]

LETTERS FROM PHYSICIANS

Several letters from physicians written at the request of the Winthrop Chemical Company contain statements (mostly opinions) favorable to the use of Torantil in allergic conditions. Grafton T. Brown of Washington, D. C., reports the oral use of Torantil in fifty or more cases comprising urticaria, asthma, perennial hay fever, eczema, migraine and other allergic manifestations. He reports the use of the product, injectable form, in one case of migraine without benefit. Briefly he gives his impressions on the oral use. He seldom notes toxic manifestations; possibly two patients may have had bad effects from the preparation. This would seem doubtful as they were very nervous and complained about a great variety of drugs when administered. He reports no benefit in cases of bronchial asthma, vasomotor rhinitis, pruritic dermatitis or migraine. Some of the cases of urticaria and angioneurotic edema were benefited. He reports encouraging results in physical allergy (heat and cold).

Robert L. Nelson, Duluth, Minn., tells of observations he reported before the St. Louis Medical Society. He states that he obtained complete relief in mild hay fever of ragweed types. Severe types were completely controlled when the pollen count was low but received no benefit when the patients went into an area where the pollen concentration was high. Two of his ragweed cases were complicated by asthma during the hay fever attacks and apparently were much benefited by the drug. The effect of the drug wore off in thirty-six hours. It is interesting to note that he reports one case sensitive to pork which was refractory because of the pork origin of the product. This is hard to understand if histaminase is the key to the cure of allergy. He further reports several cases of "cold in the head" in which there was complete relief!

A letter from Dr. C. M. Charles of St. Louis includes excerpts from a manuscript in preparation. His experience has been that many cases require high daily doses for control, as much as 150 units, which would be thirty tablets. Treatment in several of his cases with migraine was complicated by the use of other drugs, ergotamine tartrate and ephedrine. Some of the cases lead to certain doubts, since the migraine disappeared not to return for several weeks after administration of Torantil was stopped. He reports cases of bronchial asthma that were benefited but the follow-ups on these cases are too short to afford a basis for final conclusions. Vasomotor rhinitis, mostly ragweed hay fever cases, seem to have been benefited mostly on the larger doses. However, there is considerable variability in the benefits.

Dr. R. O. Muether of St. Louis University School of Medicine reports treating ten cases of rheumatoid arthritis, fifteen cases of primary dysmenorrhea, three cases of asthma, two cases of idiopathic migraine, three cases of menstrual migraine, two cases of urticaria and three cases of allergic rhinitis. While not definitely stated, the letter implies favorable results when adequate doses are employed in the treatment of these conditions. Patients with rheumatoid arthritis were not "markedly improved" but when "swelling was present this was often relieved." Eight of the ten thought they were less stiff and had less pain. Eleven of the fifteen cases of primary dysmenorrhea were benefited in from three to six menstrual periods. "In several instances when the drug was stopped the difficulty recurred only to disappear when the drug was resumed."

Dr. Omer E. Hagebusch, St. Louis, reports the use of Torantil in fifty-five cases of serum sickness including all grades of severity some of "almost fatal type"! "In all but three cases

4. Karady, S., and Browne, J. S. L.: Effect of Histaminase Treatment on Histamine and Anaphylactic Shock in Guinea Pigs, *J. Immunol.* 37:463 (Nov.) 1939.

5. Foshay, Lee, and Hagebusch, O. E.: Histaminase in the Treatment of Serum Sickness, *J. A. M. A.* 112:2398 (June 10) 1939.

6. In discussion on Foshay, Lee and Hagebusch, O. E.: Serum Sickness: Effective Treatment and Probable Prophylaxis by Means of Histaminase, abstr. *J. A. M. A.* 112:1102 (March 18) 1939.

7. Roth, Grace M., and Rynearson, E. H.: Proc. Staff Meet., Mayo Clin. 14:353 (June 7) 1939.

8. Laymon, E. C., and Cumming, H. J.: Histaminase for Urticaria and Atopic Dermatitis: Preliminary Report, *J. Invest. Dermat.* 2:301 (Dec.) 1939.

9. Rackemann, F. M.: Allergy: A Review of the Literature of 1939, *Arch. Int. Med.* 65:185 (Jan.) 1940.

10. Miller, Hyman, H., and Piness, George: Histaminase in the Treatment of Allergy, *J. A. M. A.* 114:1742 (May 4) 1940.

there has been a very prompt and gratifying relief of symptoms." Thirty-five patients with undulant fever or tularemia who were to receive serum received the product. "When the dose was adequate we could almost always prevent the occurrence of serum sickness." And those developing serum sickness had mild attacks. No toxic effects were noted even though forty tablets a day for five days were given to an occasional patient. Dr. Patrick Nagle, Oklahoma City, telling of his experience, writes "Therapeutic response in some cases has been quite encouraging, in many cases has been discouraging" and feels that "no final word may be passed upon the product at this time."

Dr. Ben A. Newman of Los Angeles writes: "My experience with the use of histaminase has been limited to a relatively small group of patients, but well controlled. All the patients upon whom the drug was used had previously been treated with all the known orthodox measures without effect; and during the period of histaminase exhibition all other active therapy was withheld. Only two dermatoses were studied, neurodermatitis and chronic urticaria. Acute urticarias were not included in my series since I felt the evaluation of therapy would be impossible." He reports no effect in six cases of generalized neurodermatitis (atopic eczema) and four cases of localized neurodermatitis (lichen simplex chronicus). Of five patients with giant urticaria and angioneurotic edema one was not benefited; three were completely relieved with the exception of small evanescent urticarial lesions, permitting gradual reduction of the dose and eventual withdrawal, and one was markedly relieved while taking large doses (from fifteen to eighteen tablets daily) but relapsed when the drug was discontinued. The identity of the orthodox control measures employed as initial treatment is not stated.

(The foregoing communications are those which were received up to May 1, 1940. Similar letters continue to be received, but thus far these offer no evidence of further significance.)

Three manuscripts are submitted by the firm. One, by Ray Williams, H. L. Alexander and T. Kirchner of St. Louis on "The Action of Histaminase on the Histamine Content of the Blood of Rabbits," is a good report of experimental work but has little bearing on the value of Torantil in the treatment of allergic states in human beings. A second paper, by Grace M. Roth and Bayard T. Horton of the Mayo Clinic, on "Histaminase: Physiologic Effects on Man and Its Therapeutic Value in Medicine," was presented at the New York Academy of Medicine before the Section on Medicine, April 16. Slides were used in presentation and no tables or protocols accompany the paper. These authors report ten cases of hypersensitivity to cold in which following the administration of histaminase for several days only slight systemic or local reaction occurred following immersion of the hand in water at 10 C. for seven minutes. In a few no reaction occurred. All patients previous to the ingestion of histaminase had marked reaction following the procedure. Instances of determination of the gastric acidity before and after the administration of histaminase are described. Marked decrease in the gastric acidity followed the ingestion of the product. "Erythromelalgia of the head," a new syndrome described by Horton (one of the authors) a year ago, yields to histaminase. "We feel that not only is 'desensitization' with histaminase a specific treatment for 'erythromelalgia of the head,' but our recent observations with the use of histaminase leads us to believe that it is almost as effective as 'desensitization with histamine.'" Of seventeen patients with serum sickness, relief in fourteen within eighteen to thirty-six hours was observed. There was no relief in three. When histaminase was started simultaneously with serum in thirteen patients, no serum sickness occurred in eight, only transient urticaria appeared in three and no relief in two. From 45 to 60 units of histaminase administered orally each day to twelve patients with insulin allergy relieved ten. The authors report that eighteen patients with vasomotor rhinitis were relieved of nasal obstruction, watery discharge and sneezing, with definite improvement in the appearance of the nasal membrane, eight patients were benefited, and fourteen patients expressed no relief. These observers have used histaminase in 150 patients without untoward effects. The third manuscript is by Alexander Altose, on "The Treatment of Certain Allergic Skin Conditions with Histaminase," read before the King County

Medical Society, Seattle, in March of this year. Torantil was supplied by the firm. The author reports the results of treatment of eighteen subjects with urticaria, angioneurotic edema and allergic dermatitis: eight greatly improved, six moderately improved and four unimproved.

SUMMARY

The use of histaminase in allergic manifestations was suggested because of the hypothetical histamine-like substance which may be responsible for all allergic responses. In the opinion of the Council this use of histaminase in the treatment of allergic states, although perhaps ingenious and suggestive, has no well established scientific clinical basis. In attempting to evaluate the clinical evidence the Council is confronted with conflicting data. Some physicians report success in one condition and others a lack of it, although enthusiasm is expressed in most of the reports available. What is lacking is a thoroughgoing study over a sufficient period (most of the case reports have been collected during the past year), alternating placebos with the histaminase to see if the effect is real or fanciful. In some of the reports, lack of success is attributed to low potency, though the firm now assures the Council that it has worked out the problems of uniform potency. The unpredictability and variability of allergic phenomena causes the Council to pursue a conservative course toward the efficacy of histaminase in the treatment of these conditions. In any event the name Torantil is meaningless and is not acceptable. The Council does not wish to discourage further experimental investigation of histaminase under rigidly controlled conditions.

The Council voted that, as a brand of histaminase, Torantil lacks evidence to justify its present inclusion in N. N. R.; further, that it is marketed under an objectionable name with claims which are not justified. The Council decided to hold in abeyance further consideration of histaminase and of Torantil until the development of further evidence and authorized publication of the foregoing preliminary report.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LFECH, Secretary.

AMINOPHYLLINE (See New and Nonofficial Remedies, 1940, p. 555).

Aminophylline-Merrell.—A brand of aminophylline-N. N. R. Manufactured by the Wm. S. Merrell Co., Cincinnati, Ohio. No U. S. patent or trademark.

Ampul Solution Aminophylline-Merrell, 0.48 Gm. (7½ grains), 2 cc.

Ampul Solution Aminophylline-Merrell, 0.24 Gm. (3¾ grains), 10 cc.

ASCORBIC ACID-SQUIBB—(See New and Nonofficial Remedies, 1940, p. 532).

The following dosage form has been accepted:

Tablets Ascorbic Acid-Squibb, 100 mg.: Each tablet is equivalent to 2,000 international units of vitamin C.

SODIUM CACODYLATE (See New and Nonofficial Remedies, 1940, p. 109).

Endo Products, Inc., Richmond Hill, New York.

Ampoules Sodium Cacodylate-Endo, 0.065 Gm. (1 grain), 1 cc.: Benzyl alcohol 1 per cent is added for its local anesthetic effect.

Ampoules Sodium Cacodylate-Endo, 0.13 Gm. (2 grains), 1 cc.: Benzyl alcohol 1 per cent is added for its local anesthetic effect.

Ampoules Sodium Cacodylate-Endo, 0.2 Gm. (3 grains), 1 cc.: Benzyl alcohol 1 per cent is added for its local anesthetic effect.

Ampoules Sodium Cacodylate-Endo, 0.3 Gm. (5 grains), 1 cc.: Benzyl alcohol 1 per cent is added for its local anesthetic effect.

Ampoules Sodium Cacodylate-Endo, 0.5 Gm. (7½ grains), 1 cc.: Benzyl alcohol 1 per cent is added for its local anesthetic effect.

THIAMIN CHLORIDE-ABBOTT (See New and Nonofficial Remedies, 1940, p. 529).

The following dosage forms have been accepted:

Tablets Thiamine Hydrochloride-Abbott, 9 mg.: Each tablet contains 3,000 U. S. P. units of thiamine hydrochloride.

Tablets Thiamine Hydrochloride-Abbott, 12 mg.: Each tablet contains 4,000 U. S. P. units of thiamine hydrochloride.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, SEPTEMBER 21, 1940

THE PLATFORM OF THE AMERICAN MEDICAL ASSOCIATION

The American Medical Association advocates:

1. The establishment of an agency of the federal government under which shall be coordinated and administered all medical and health functions of the federal government exclusive of those of the Army and Navy.
2. The allotment of such funds as the Congress may make available to any state in actual need, for the prevention of disease, the promotion of health and the care of the sick on proof of such need.
3. The principle that the care of the public health and the provision of medical service to the sick is primarily a local responsibility.
4. The development of a mechanism for meeting the needs of expansion of preventive medical services with local determination of needs and local control of administration.
5. The extension of medical care for the indigent and the medically indigent with local determination of needs and local control of administration.
6. In the extension of medical services to all the people, the utmost utilization of qualified medical and hospital facilities already established.
7. The continued development of the private practice of medicine, subject to such changes as may be necessary to maintain the quality of medical services and to increase their availability.
8. Expansion of public health and medical services consistent with the American system of democracy.

THE CLOSED PLASTER METHOD OF TREATING COMPOUND FRACTURES AND INFECTED WOUNDS

The treatment of compound fractures and infected wounds during the war of 1914-1918 underwent numerous changes. The general trend was toward the local use of chemicals to kill the bacteria and check the sepsis. Carrel and Dakin, the last and most successful exponents of this trend, introduced on a large scale continued irrigation of the wound with sodium hypochlorite, the antiseptic property of which was combined with weak toxicity for tissues. The postwar contributions of Baer of Baltimore and of H. Winnett Orr of Lincoln, Neb., introduced a new principle in the treatment of these conditions, that of physiologic rest to the injured part. The principle is embodied in Orr's closed

plaster method, the essential feature of which is the complete immobilization of the soft tissues. No attempt is made to kill the organisms by external agents. The reliance is placed entirely on the ability of the body to resist bacterial infection.

The first large scale experiment in the appliance of these principles was made possible in the Spanish war. There chiefly owing to the enthusiasm of Trueta, chief surgeon of the General Hospital of Catalonia, the method was adopted in the medical service of the republican army. The total number of cases treated was 20,000. The incidence of gas gangrene and of other infections fell so definitely that foreign surgeons who came to Catalonia at the later stages of the war were led to believe that the soil of Spain contained no anaerobes.

The method, as described in Trueta's¹ recent monograph, is carried out in the following manner: Surgical treatment is undertaken as soon after occurrence of the fracture as possible; with the patient anesthetized, thoroughly wash the entire extremity and the wound with soap and water and a nail brush, shave all hair and paint the surrounding skin with a weak solution of iodine; excise the skin edges of the wound, remove all contused tissue and widen the wound; excise carefully and unhesitatingly all nonviable muscular and cellular tissues; open up the neighboring cellular surfaces affected by contusion, always keeping in mind the need for adequate drainage; remove all foreign material; reduce the fracture by traction on an orthopedic table; dress the wound with sterile gauze and immediately immobilize with plaster including the two adjoining joints if possible. The plaster is applied according to the method of Bohler directly to the skin, only the bony prominences being padded; administer 3,000 units of tetanus antitoxin. It is not permissible to cut a window in the cast, since this deprives the soft tissues of much needed immobilization. "It can be observed," says Trueta, "that the tissues swell into the gap in the plaster and their healing power is correspondingly weakened." This is in essence Orr's treatment with a single exception, namely that Trueta employs dry gauze as dressing for the wound instead of Orr's petrolatum pack. The plaster is left in position as long as the smell is not excessive and the plaster has not become soft and wet. It may be left in position for from four to six weeks and then replaced and left in position until such time as the fracture has healed.

Orr² obtained good results with this method in from 85 to 90 per cent of compound infected fractures in

1. Trueta, J. J.: *Treatment of War Wounds and Fractures with Special Reference to the Closed Method as Used in the War in Spain*, New York, Paul B. Hoeber, Inc., 1940.
2. Orr, H. W.: *Treatment of Compound Fractures with Special Reference to Military Surgical Procedures*, Arch. Surg. 40:825 (May) 1940.

civilian practice. The method, according to Trueta, is particularly adapted to conditions of modern warfare, in which in addition to the usual military casualties there are large numbers of civilians wounded by aerial bombardment. In Trueta's own material there were 1,073 cases of compound fractures of the limbs, most of them war wounds. There were six fatalities, 976 good or satisfactory results and ninety-one poor results. Trueta expresses the belief that no other treatment could have enabled them to alleviate for so many victims the horrors of war and air raids. Dr. Matas,³ who had an opportunity to observe the method in the Catalan war zone, writes: "I had an opportunity to see several plaster encasements removed from arms and thighs after they had been in situ for from fifteen to twenty-one days. The stench of the soiled encasement was nauseating. A magma or mush of decomposing pus and wound secretions covered the surface of the wound under the plaster bandage. But after washing this off with warm water and soap, and when the packs were removed, I was surprised to see the excellent, healthy, pink, well granulated appearance of the wound coupled with a very satisfactory condition of the patients—no fever, no pain, good appetite. This was indeed a revelation I did not anticipate." Matas quotes Dr. Jiménez of Banolas, under whose direction there were treated 6,000 fractures, of which 500 were fractures of the femur, with a mortality for the total group of 3.2 per cent. There was only one case of gas gangrene and this one had appeared before admission to the hospital.

The rationale of treatment is based on the following considerations: 1. Rest allows local veins and capillary thrombi to form. These prevent and delay the spread of infection and are not broken down by repeated handling. 2. Rest allows new capillaries to form which are not torn down by repeated dressing of the wound. 3. The plaster maintains a constant beneficial pressure on the wound; the calcium in it may be of local value much as the calcium gluconate exuded by the maggots according to Stewart. 4. The mixture of organisms on the wound may by their mutual antagonism prevent the victory of any one group. 5. To leave a deep wound uncovered produces dehydration and loss of heat leading to a condition of shock. The success of the method depends in a large measure on a thorough understanding of the underlying principles and rigid adherence to a meticulous technic. "It is fallacious to believe," warns Trueta, "that it suffices to enclose a wounded limb in a plaster of paris cast to achieve the benefits of closed treatment." He emphasizes that the method should be employed by those qualified by training to plan and undertake the first stages of the technic, which are purely surgical.

HISTAMINE AND ANAPHYLAXIS

Haag and Lutz,¹ of Düsseldorf, and Farmer,² of Lenox Hill Hospital, New York, have shown that anaphylactic shock may be decreased in severity by at least two types of antihistamine therapy. These demonstrations go far to settle one of the historic controversial questions in allergic physiology. Since the time of the late Victor C. Vaughan, speculative theories of anaphylaxis have centered around the question of secondary toxicity. Vaughan's original assumption that the dominant symptoms in anaphylaxis are due to "anaphylatoxins" formed by partial hydrolysis of parenterally injected foreign proteins was eventually discarded. It was replaced by the Dale-Laidlaw³ theory, which assumes that stored-up vasodilator substances are set free by the fixed tissue cells as a result of antigen-antibody reactions and that these freed histamine-like substances are the immediate cause of the typical allergic symptoms. This histamine theory has been subjected to extensive biochemical and physiologic research. A definite increase of histamine-like substances in the liver, spleen and bronchial musculature, for example, results from experimental protein sensitization. A liberation of these stored vasodilator substances follows local tissue injury. Bartosch and his co-workers,⁴ for example, applied perfusion methods to hypersensitive lungs and found that such substances are set free into the perfusion fluid as a result of allergic bronchoconstriction.

Physiologic assays have shown that relatively large amounts of histamine are normally present in the stomach wall. The walls of the small intestine in contrast are practically free from histamine. From this it has been deduced that there is presumably a histamine-destroying enzyme in intestinal tissues. This deduction has been confirmed by the recent extraction of a powerful histaminase from the normal intestinal mucosa. This enzyme has been tentatively standardized, the provisional unit being the amount of extract necessary to destroy or inactivate 1 mg. of histamine in vitro by the end of twenty-four hours' incubation at 37 C. Rose and Browne,⁵ however, found in the rat that histaminase occurs only in the lung and small intestine but that within fifteen minutes after intravenous injection of histamine the tissues contain more histamine than the blood. After fifteen minutes the rapidity of disappearance from the tissues occurs in the following order: blood, lung, lymph gland, liver and kidney. After thirty minutes the rate of disappearance is greater from the kidney than from the other tissues named. Adrenalectomy was shown to retard the rate of disappearance

1. Haag, F. E., and Lutz, Lorenz: *Ztschr. f. Immunitätsforsch.* **96**: 117 (July) 1939.

2. Farmer, Laurence: *J. Immunol.* **36**: 37 (Jan.), **37**: 321 (Oct.) 1939.

3. Dale, H. H., and Laidlaw, P. P.: *J. Physiol.* **52**: 355 (March) 1919.

4. Bartosch, R.; Feldberg, W., and Nagel, E.: *Arch. f. d. ges. Physiol.* **230**: 674 (Sept.) 1932; **231**: 616 (Jan.) 1933.

5. Rose, Bram, and Browne, J. S. L.: The Distribution and Rate of Disappearance of Intravenously Injected Histamine in the Rat, *Am. J. Physiol.* **124**: 412 (Nov.) 1938.

3. Matas, Rudolph: Discussion, *Ann. Surg.* **112**: 267 (Aug.) 1940.

of histamine from the tissues, especially the kidney. These results suggest that factors other than histaminase may defend the organism against the action of histamine.

If the Dale-Laidlaw theory of anaphylotoxin is correct, one might predict that this histamine-destroying enzyme injected parenterally would have prophylactic or therapeutic effects in anaphylactic shock. This prediction was tested by Haag and Lutz, who found that in guinea pigs a single intraperitoneal injection of one unit of this enzyme, given a few hours before the allergic test, greatly reduces the severity of the resulting anaphylactic shock. In no case, however, did such injection completely prevent the anaphylactic reaction, a result that was in accord with the Dale theory. Similar results have been obtained by Karady and Browne,⁶ who found that some animals not protected by the preadministration of histaminase survived large doses of histamine and egg white, the latter given to animals previously sensitized to this protein. The alleged prophylactic effect is presumably due to an enzymic reduction in the amount of available histamine in the fixed tissues.

A somewhat different method of therapeutic attack was made possible by Fuehner's⁷ observation that "refractoriness" to histamine can be induced in experimental animals by repeated parenteral injections of increasing doses of histamine. If the anaphylactic symptoms are due to fixed-tissue liberation of histamine, such histamine-refractory animals presumably would be relatively insusceptible to anaphylactic shock. In order to test this conclusion, Farmer gave a series of sensitized guinea pigs repeated intraperitoneal injections with histamine over a period of from twelve to eighteen days. He then tested the reactions of uterine strips from these animals by the routine Schultz-Dale technic, control tests being made with strips removed from sensitized guinea pigs that had not received histamine therapy. Titrations of allergic sensitivity showed that the uterine musculature of the treated guinea pigs was not only refractory to histamine but at the same time distinctly less sensitive to specific foreign protein. While 65 per cent of the control strips reacted to 1:250,000 dilutions of specific foreign protein, but 22 per cent of the treated strips reacted to this dilution. This suggests a threefold reduction in allergic sensitivity as determined by his arbitrary test dose.

Farmer afterward found that a similar though less effective histamine refractoriness with accompanying reduction in protein sensitivity can be conferred on guinea pigs by repeated oral administration of histamine. His effective antianaphylactic dose was 3 mg. of ergamine phosphate given by mouth at two to three day intervals over a period of two to three weeks.

Farmer's general conclusion from his data is that "histamine is the substance responsible for the anaphy-

lactic contraction of plain muscle." This is essentially a confirmation of the Dale-Laidlaw theory of anaphylaxis. The clinical value of induced histamine refractoriness in allergic disease, however, has not yet been determined.

Current Comment

THE SELECTION OF MILITARY PILOTS

Many factors enter into the proper choice of men who are qualified to fly combat planes, including age, inherent psychologic ability and, of course, such well recognized physical qualities as eyesight, coordination and sound cardiovascular functioning. Numerous problems are also involved in care of fliers after their training. Methods have been or are now being devised to detect potential "air neuroses," to counteract the effects of lack of oxygen due to high altitudes and to study countermeasures against the so-called black-out which apparently results from insufficient circulation to the brain during rapid descent. The subject is far too complicated for brief discussion but is receiving serious attention in such publications as the German Army's Medical Guide for Flying Personnel, in the book by Armstrong on the "Principles and Practice of Aviation Medicine" and even in such periodicals as the current issue of *Fortune*. The study of the entire subject requires the active cooperation of physiologists and physicists and has resulted in a new specialty in medical practice—the flight surgeon.

DEATHS FROM POISONING IN MASSACHUSETTS

About 10 per cent of the deaths certified by medical examiners over a ten year period in Massachusetts were recorded as due to ingestion of toxic substances, according to a recent study by Alexander and his co-workers.¹ There were in all 8,661 such cases. Of these 4,505 were directly related to the ingestion of ethyl alcohol, this substance being responsible for 52 per cent of all deaths due to poisoning in the medico-legal sense. Illuminating gas accounted for 21 per cent and "nontherapeutic chemicals" for 11 per cent. Carbon monoxide other than illuminating gas caused 8 per cent and surgical anesthetics 4 per cent of all fatalities due to toxic substances. Sedative drugs were responsible for 3 per cent and nonsedative drugs for 1 per cent of the deaths. Of the 271 deaths from sedative drugs 152 resulted from barbiturates, eighty-seven from alkaloids, including opium and its derivatives, eight from paraldehyde, six from chloral, six from bromides and twelve from undefined sedative drugs. Alcoholic individuals were represented in each of these groups. Of the total deaths from sedative drugs 56.1 per cent were accidental, 36.5 per cent suicidal, 16.2 per cent alcoholic and 17.4 per cent unknown. The most striking feature of the report is the high percentage of deaths from poisoning which are due to ethyl alcohol.

6. Karady, S., and Browne, J. S. L.: Effect of Histaminase Treatment on Histamine and Anaphylactic Shock in Guinea Pigs, *J. Immunol.* 37: 463 (Nov.) 1939.
7. Fuehner, H.: München. med. Wehnschr. 59: 852, 1912.

1. Alexander, Leo; Moore, Merrill, and Leary, Timothy: Deaths from Poisoning, Incidence in Massachusetts, *Am. J. M. Jurisp.*, vol. 2, No. 7, 1939.

MEDICAL PREPAREDNESS

In this section of The Journal each week will appear official notices by the Committee on Medical Preparedness of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medical preparedness, and such other information and announcements as will be useful to the medical profession.

MEDICAL REGIMENT TRAVELS THREE THOUSAND MILES

The First Medical Regiment, which for eighteen years had been stationed at the Field Service School at Carlisle Barracks, Pa., arrived in Camp Ord, California, June 28, after having marched 3,102 miles in fourteen days. The regiment averaged more than 250 miles each marching day and on some days made more than 300 miles. Almost the entire distance was made over U. S. Highway 40, although U. S. Highway 30 was followed through the mountains. The regiment consisted of seven officers of the medical corps and 180 enlisted men under the command of Lieut. Col. Robert P. Williams. The march was made without a single serious injury and only one slight accident to a motorcycle sergeant, who was struck by a civilian car.

INSTRUCTION IN AVIATION MEDICINE

A six weeks course of instruction to qualify physicians for military duty as medical aviation examiners was recently completed at the School of Aviation Medicine, Randolph Field, Texas, the commandant of which is Lieut. Col. F. L. Pratt, M. C. About thirty medical officers were enrolled for the course. The School of Aviation Medicine also conducted a resident course of instruction to qualify enlisted specialists which was attended by twenty-six enlisted men of the medical department, including one noncommissioned officer of the National Guard of Washington. The School of Aviation Medicine, in addition to resident courses, throughout the year, conducts extensive correspondence courses.

EXAMINATION FOR APPOINTMENT IN MEDICAL CORPS OF NAVY

Examinations for appointment as assistant surgeon and acting assistant surgeon (intern) in the Medical Corps of the U. S. Navy will be held Jan. 6-9, 1941, it is announced. The appointments as assistant surgeon in the regular Navy will be effective in about two months after the examination and those for acting assistant surgeon (intern) will be effective July 1, 1941. Requests for authorization to appear for these examinations should be submitted to the Bureau of Medicine and Surgery, Navy Department, Washington, D. C., in time to permit the authorization to reach the applicant prior to December 30.

Applicants for appointment as assistant surgeon must be citizens of the United States between the ages of 21 and 31, must be graduates of recognized medical schools and must have completed one year of intern training in a hospital approved by the Council on Medical Education and Hospitals of the American Medical Association. Applicants for the appointment as acting assistant surgeon (intern) are not required to submit evidence of intern training and are appointed for eighteen months to serve as interns in naval hos-

pitals. After one year of service they are eligible for examination for appointment as assistant surgeons.

In the normal rotation of assignments, the naval officer's preference is given every practicable consideration for the type of duty he desires, according to the announcement. Officers are encouraged to develop a specialty after they have completed their first cruise at sea and provision is made for special training. Information about physical requirements, rates of pay and other details may be obtained by addressing the Bureau of Medicine and Surgery, Washington, D. C.

Appointments are also being made in the Medical Corps, U. S. Naval Reserve, of male citizens who are under 50 years old and who meet physical and professional requirements.

Applications for appointment to the Medical Corps of the Naval Reserve should be addressed to the commandant of the naval district in which the applicant resides. Addresses of the commandants may be obtained from the Bureau of Medicine and Surgery.

GRADUATES OF MEDICAL FIELD SERVICE SCHOOL

At the Medical Field Service School, Carlisle Barracks, Pa., in June graduation exercises were held for the second basic class, at which Brig. Gen. Roger Brooke of the U. S. Army Medical Corps, commandant of the field service school, delivered the address. All officers of the graduating class took part in the maneuvers of the third army at Fort Benning, Ga., and in the Sabine Area. Half of the graduating class were attached to medical regiments and battalions having these maneuvers and half were attached to regimental medical departments. These assignments were later alternated so that each student could get experience with the various medical units. The physician graduates of the Field Service School were as follows:

CAPTAINS

W. H. Amspacher J. E. Tate

FIRST LIEUTENANTS

H. L. Berman	E. R. Marshall
H. C. Boyd	J. T. Martin
G. C. Boyer	C. E. Melcher
J. W. Brown	C. K. Morris
M. D. Buscemi	M. P. Moursund
G. J. Collins	R. L. O'Toole
R. B. Croissant	N. E. Peatfield
W. N. Donovan	W. N. Piper
C. N. Ekman	D. E. Reiner
R. T. Jenkins	G. L. Richey
H. S. Johnson	F. J. Shaffer
T. D. Johnson	R. B. Sigafos
N. E. King	B. E. Smith
A. W. Kuske	R. C. Stiles
W. T. Lane	W. K. Sullivan
R. N. Lehman	A. P. Thom 3d
R. H. Looney Jr.	D. E. Thomas
R. Loughmiller	

ORGANIZATION SECTION

OFFICIAL NOTES

COUNCIL ON INDUSTRIAL HEALTH

Report of July Meeting

The sixth meeting of the Council on Industrial Health took place on July 14, 1940, at the Palmer House in Chicago. Members in attendance were Stanley J. Seeger, chairman, Harvey Bartle, Leroy U. Gardner, Henry H. Kessler, Anthony J. Lanza, Robert T. Legge, C. W. Roberts, R. L. Sensenich (ex officio), Olin West (ex officio) and Carl M. Peterson, secretary. Also in attendance were Miss Joanna Johnson, chairman of the Industrial Nursing Section of the National Organization for Public Health Nursing, R. G. Leland, director of the Bureau of Medical Economics of the American Medical Association, and Paul A. Neal, acting chief, Division of Industrial Hygiene of the National Institute of Health.

Transactions of interest to the profession were as follows:

1. The Committee on Nomenclature reported further progress on material being collected for a compendium of terms used in the industrial health field.

2. The Committee on State Associations has continued to press for the appointment of cooperating committees in all state medical associations. There are now thirty-five such organized units. A uniform program has been submitted to these state committees and recommendations forwarded in respect to committee personnel. Active assistance will be sought from the organized state units in and through medical preparedness.

Attention will be called to the recent action of the House of Delegates relative to medical representation on boards administering workmen's compensation laws and regarding the preparation of fee schedules.

3. The Committee on Education and Publications submitted plans for the second Industrial Health Number of *THE JOURNAL* and for a series of special publications on medical service in industry and on occupational disease. A syllabus intended to assist in the development of adequate industrial medical education is now in preparation. The committee also reported recent improvements which have occurred in the field of undergraduate and postgraduate industrial medical education. During the past year exhibits have been prepared and demonstrated at medical society meetings and elsewhere.

4. The Council intends to continue to develop a clearing house of information on all industrial health matters. Methods of gathering and disseminating information were considered.

5. The census of physicians engaged in industrial practice recently made by the Council will shortly be augmented by data received through the Medical Preparedness Committee survey of medical personnel. To all such physicians a further questionnaire will be sent to determine qualifications for special industrial health assignments and special medical facilities now available.

6. The means for practical working relationships with the Committee on Industrial Dermatoses of the Section on Dermatology and Syphilology were discussed.

7. Lists of reliable textbooks and references are under preparation in the Council office as steps toward developing an industrial health bibliography.

8. The Council took note of the present status of legislation regarding industrial health under consideration in the present Congress.

9. The Council reviewed contacts recently established with other agencies interested in industrial health matters.

10. Plans were presented for the development of field work to make more effective the work of the Council and its cooperating committees in the state and county medical societies and to determine how the resources of physicians in the various states can be assembled and coordinated to constitute an effective health program in industry.

Attention was also directed to the contribution which a program of field activity could make to medical preparedness.

11. The Council received a report on syphilis in industry, preliminary to the development of a set of principles to be observed in the matter of case finding and management of syphilis among the employed population.

12. Attention was directed to the growing practice of industrial physical examination.

13. The subject of industrial nursing was considered, especially the means available to the Council for active assistance to the industrial nurse and industrial nursing organizations to improve the preparation and qualifications for an industrial nurse, to define proper functions, and to clarify all medico-nursing relationships in industry.

14. A memorandum is being drafted for submission to the International Association of Industrial Accident Boards and Commissions in the hope that that association will take favorable action on the development of uniform methods of statistical presentation of work done by the various state industrial commissions.

15. An extended discussion of medical preparedness occurred. The Council concluded that the best means for assisting the Committee on Medical Preparedness regarding industrial health which under existing circumstances gave the greatest promise of avoiding duplication of effort would be:

(a) To bring to the attention of the Surgeon General of the U. S. Public Health Service that

(1) The survey of physicians now being undertaken by the American Medical Association is paying direct attention to those available for service in industry.

(2) Additional information is to be sought from these same physicians about available medical facilities under their direction and about qualifications for special industrial activity.

(b) To request each member of the Council to submit suggestions promptly on methods of organization for effective work in the field of industrial health and that these suggestions be referred to the Committee on Medical Preparedness.

(c) To advocate the usefulness of field activity in relationship to medical preparedness.

16. Nominations were made and other plans laid for filling the existing vacancies in the membership of the Council.

17. A tentative program for the 1941 Congress on Industrial Health was submitted.

RADIO PROGRAM "DOCTORS AT WORK"

The winter and spring season of network radio broadcasting will be resumed by the American Medical Association in cooperation with the National Broadcasting Company over the Blue network of stations beginning Wednesday, November 13, at 10:30 to 11 p. m. eastern standard time (9:30-10 central, 8:30-9 mountain and 7:30-8 Pacific).

The program will be in dramatized form constituting the sixth successive season of dramatized broadcasting by the Association on a nationwide network. The title of the program will be *Doctors at Work*. The theme of the program will be the interpretation to the listener of services available in the treatment of disease and the preservation and promotion of health through the various branches of modern medicine. Thirty programs are planned dealing with different phases of medical practice, beginning with medical education, internship, residency and general practice and embracing all the major specialties in medicine and in medical phases of public health work.

The scripts will be written by William J. Murphy, director of continuity for the central division of the National Broadcasting Company, and will be under the supervision of the Bureau of Health Education with the cooperation of Miss Judith Waller, educational director, central division, National Broadcasting Company.

The evening hour assigned for these broadcasts is the most favorable hour that has ever been made available for sustaining health education broadcasts. Poster announcements of the pro-

grams have been prepared by the Bureau of Health Education. These will be sent in any reasonable quantity which can be effectively used on request from state or local medical societies and units of the Woman's Auxiliary or to health departments, schools or other educational institutions.

Titles of programs to come will be published three weeks in advance in *THE JOURNAL* and monthly in advance in *Hygeia*.

Comments on the program from physicians and other listeners are invited.

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Changes in Status.—The Conscription Bill, as agreed to by the Senate and the House, retains the provision providing for deferring the conscription of students, including medical students, the details of which provision were set forth in *THE JOURNAL* last week. The bill does not automatically defer the conscription of such students but provides that they be given a deferred status, on request. S. 3607 has passed the Senate, proposing a federal appropriation of \$75,000 for the fiscal year ending June 30, 1941, and for the five succeeding fiscal years federal appropriations increased at the rate of \$10,000 for each year, for use by the United States Public Health Service in conducting researches, investigations, experiments and studies relating to the cause, diagnosis and treatment of dental diseases, and to foster similar research activities by other agencies. S. 4245 has passed the Senate, authorizing the establishment of naval hospitals at the naval air stations at Jacksonville, Fla., and San Juan, Puerto Rico; the submarine base, Coco Solo, Canal Zone; the naval station, Guantanamo Bay, Cuba, and the marine barracks, Quantico, Va.

Bills Introduced.—S. 4314, introduced by Senator Hill, Washington, proposes to grant permanent total disability rating to veterans suffering from service connected tuberculosis disability if such disease remains active after two years' hospitalization. S. 4328, introduced by Senator Barbour, New Jersey, provides that no employer having contractual relations with the United States and engaged in the manufacture for or sale to the United States of supplies or equipment of any description shall dis-

criminate against any applicant for employment suffering from a physical disability, if such applicant shall have successfully completed a course of vocational training financed or directed in whole or in part by any agency of the United States government, and shall have been certified by such agency as qualified to perform the work for which he has applied. Such physically handicapped persons, the bill provides, shall not be entitled to preference in employment but shall be considered for any vacancy on an equality with applicants who are not physically handicapped. S. 4326, introduced by Senator Sheppard, Texas, provides for continuing in the Army, Navy, Marine Corps and Coast Guard of the United States, beyond the term of their enlistment, those suffering from service connected disease or injury and in need of medical care or hospitalization until recovery through such medical care and hospitalization.

DISTRICT OF COLUMBIA

Changes in Status.—H. R. 9284 has been reported to the Senate, directing the Commission on Licensure to Practice the Healing Art in the District of Columbia to issue a license to practice the healing art to Dr. A. L. Ridings, formerly of Sherman, Texas. H. R. 9525 has passed the Senate, providing for the reorganization of the government of the District of Columbia.

Bill Introduced.—H. R. 10418, introduced by Representative Boland, Pennsylvania, proposes to direct the Commission on Licensure to Practice the Healing Art in the District of Columbia to issue a license to practice the healing art to Dr. Peter Florey.

WOMAN'S AUXILIARY

Alabama

The auxiliary to the Calhoun County Medical Society has held regular meetings in Anniston during the year with an average attendance of twenty-five members. Subjects discussed and speakers thereon are as follows: "Proposed Project of Establishing Prenatal Clinic," Dr. J. M. Kimmey; "The Need of an Auxiliary in Each County," Mrs. W. M. Salter; "The Story of a Doctor's Wife," Mrs. N. T. Davie; "Longevity," Dr. J. M. Kimmey, and "Socialized Medicine," Mrs. James Britton.

At a meeting of the auxiliary to the Mobile County Medical Society in Mobile, Mrs. Percy Howard spoke on "Morals of Youth." The auxiliary has as its chief project the raising of funds for the institution for the prevention of tuberculosis in children.

The Talladega County Medical Society auxiliary has met regularly in Talladega. At the March meeting Mrs. A. F. Toole read a paper on "Doctors Through the Ages." The auxiliary provides linens and garments for the Citizens Hospital at Talladega.

Missouri

At the annual meeting of the auxiliary to the Missouri State Medical Association in Joplin recently addresses were given by Dr. Nathan B. Van Etten, President-Elect of the American Medical Association, Drs. James R. McVay and Cyrus E. Burford, president and president-elect, respectively, of the Mis-

souri State Medical Association, and Dr. Herbert L. Mantz, adviser to the auxiliary.

At recent meetings of the auxiliary to the Boone County Medical Society, speakers and their subjects were as follows: Dr. William Byrne Brown, director of the Stephens College Health Service, "Modern Trends in Medicine," and Dr. Fred McKinney, professor of psychology, University of Missouri, "Mental Health."

At a meeting of the auxiliary to the Cape Girardeau County Medical Society, Dr. A. C. Magill of State Teachers College spoke on "The Influence of Louis Pasteur on Medical Progress."

Dr. Milton D. Overholser spoke on "Laboratory Cancer Research" and Dr. Claude J. Hunt on "Effective Cancer Research" at the annual public relations meeting of the auxiliary to the Cass County Medical Society in Harrisonville.

Dr. J. C. Mulliniks spoke on "Our County Health Program" at the March meeting of the auxiliary to the Greene County Medical Society in Springfield.

Dr. R. C. Haynes spoke on "Problems Concerning the Medical Profession Today" at the March meeting of the auxiliary to the Saline County Medical Society in Marshall.

South Dakota

At a meeting of the auxiliary to the Fourth District Medical Society in Pierre recently it was voted to donate \$10 to the benevolent fund of the auxiliary and to place *Hygeia* in several of the schools of the Fourth District.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARKANSAS

First Councilor District Meeting.—The First Councilor District Medical Society will offer the following program at a meeting in Osceola, October 2:

Dr. Charles H. Lutterloh, Hot Springs National Park, Gout.
Dr. Francis Murphey, Memphis, Tenn., Ruptured Intervertebral Disk.
Dr. Oliver C. Melson, Little Rock, Differential Diagnosis of Rheumatic Affections.
Dr. Neuton S. Stern, Memphis, Acute Rheumatic Fever.
Dr. Walter T. Swink, Memphis, Etiology of Chronic Arthritis.
Dr. William C. Colbert, Memphis, Rheumatism as a Social and Economic Problem.
Dr. Joseph F. Hamilton, Memphis, Use and Abuse of Physiotherapy in Chronic Arthritis.
Dr. William C. Chaney, Memphis, Medical Treatment of Rheumatoid Arthritis.

CALIFORNIA

Extend Child Study.—The General Education Board has given \$61,700 to the Institute of Child Welfare of the University of California, Berkeley, permitting the continuation and extension of studies, already under way, on the mental and physical development of school children. Under the grant, a research center was to be opened September 1, supplementing the present offices of the institute. It will contain library facilities for the use of students in the field of child development and statistical and research offices for members of the staff, graduate students and other members of the university faculty. The grant will be administered under the direction of Harold Ellis Jones, Ph.D., director of the institute, and will cover a four year program. One of the specific studies deals with the analysis of physical changes as shown by growth in height and changes in body proportions, physiologic maturing as revealed by measurements of x-rays of the bones and assessments of physical ability and efficiency based on functional tests and laboratory records of physiologic changes during exercise.

DISTRICT OF COLUMBIA

New Reportable Diseases.—New regulations have been approved in the District to aid in the control of communicable diseases, newspapers reported August 13. Under the new disease code all persons in charge of hospitals, institutions or dispensaries are asked to report a communicable disease carrier to the department within twenty-four hours after discovery. All other persons knowing of a person afflicted with a communicable disease are likewise expected to report to the department. Forty-seven communicable diseases are specified in the code as reportable. Twenty-two of these are new, it was stated. The new regulations carry a penalty for violations. They were drawn in conjunction with the public health service and have the approval of the Medical Society of the District of Columbia.

GEORGIA

Personal.—Dr. Hugh J. Bickerstaff, Atlanta, associate director in the division of maternal and child health, state department of health, has resigned to become associate professor in public health administration at the Johns Hopkins University School of Hygiene and Public Health, Baltimore. Dr. Aldean Starr Ingram, Atlanta, was to succeed Dr. Bickerstaff in the department, beginning September 1.

Changes in Health Directors.—Dr. Chester A. Hicks, formerly of Ann Arbor, Mich., has been elected commissioner of health for the district composed of Bleckley and Dodge counties, with headquarters in Eastman. According to *Georgia's Health*, the formation of this district necessitates transferring Dodge County from the Southeastern to the East Central health region. Dr. Bert H. Malone, Waycross, has resigned as medical director of the Southeastern health region, effective August 1.

ILLINOIS

Society News.—Dr. Frank Deneen, Bloomington, discussed "Management of Some Types of Nonsurgical Goiter" before the Madison County Medical Society in Edwardsville, September 6.—The Pike-Calhoun County Medical Society was recently addressed at Barry by Drs. Andy Hall Jr. on "Urinary

Tract Infections"; Fred A. Kramer, "Vitamin Deficiencies and Their Relationship to the Gastrointestinal Tract," and J. William Thompson, "Surgical Management of Gastrointestinal Malignancy." All are of St. Louis.

CHICAGO

Dr. Oliver Appointed Professor of Dermatology.—Dr. Edward A. Oliver has been appointed professor and chairman of the department of dermatology and syphilology at Northwestern University Medical School. He succeeds Dr. Arthur W. Stillians, who was retired as of September 1 with the title professor emeritus. Dr. Oliver has been associate clinical professor of dermatology at Rush Medical College since 1927 and has been a member of the Rush faculty since 1912. He graduated at Rush in 1909. Dr. Stillians graduated at the University of Illinois College of Medicine in 1899 and has been professor of dermatology and syphilology at Northwestern since 1919.

Fellowship for Research in Rheumatic Fever.—The Chicago Heart Association, Inc., has received from the Clara A. Abbott Trust a gift of \$27,000 to be added to the Memorial Fund founded in memory of Morris Fishbein Jr. The money is to be used either by itself or with other funds of the society for the study and treatment of diseases of the heart and the circulation. A fellowship is to be established in a hospital or medical school in Chicago, which will be devoted primarily to the study of the cause and treatment of rheumatic fever. The Clara A. Abbott Trust has already donated millions of dollars to the University of Chicago, to Northwestern University and to the Evanston Hospital, since the purpose of the Clara A. Abbott Trust is to aid the care of the sick and the advancement of medical science. The Memorial Fund of the Chicago Heart Association, now almost \$40,000, was established in 1929 by Dr. and Mrs. Morris Fishbein at the time of the death of their son from rheumatic fever. The fund is administered by a self-perpetuating committee of five, including Drs. Robert B. Preble, Newell C. Gilbert, James B. Herrick, Walter W. Hamburger and Morris Fishbein. The officers of the society include Dr. Sidney Strauss, president; Dr. George K. Femm, secretary, and Mr. Joseph L. Valentine, treasurer. The executive director is Mrs. Ruth McEldowney. Applications for the fellowship may be sent to the Chicago Heart Association, 203 North Wabash Avenue.

INDIANA

New Tuberculosis Hospital.—The new Southern Indiana Tuberculosis Hospital, near New Albany, was opened to patients August 19. The hospital cost \$650,000 and has a capacity of 150 beds. Dr. Jerome V. Pace, New Albany, is superintendent.

District Meeting.—The Eleventh Indiana Councilor District Medical Association will meet at Manchester College, North Manchester, October 2. The speakers will include Drs. Charles R. Bird, Indianapolis, on "Medical Preparedness and Service"; Elton R. Clarke, Kokomo, "Experiences in Conducting a Baby Clinic in Private Practice," and Harold M. Trusler, Indianapolis, "Burns and Their Treatment."

Courses in Obstetrics and Pediatrics.—The Indiana State Medical Association, the Indiana University School of Medicine and the bureau of maternal and child health of the state board of health are cooperating in a series of regional postgraduate courses in obstetrics and pediatrics. One group in obstetrics opened in Kokomo, September 6, under the auspices of the Howard County Medical Society, and one in Crawfordsville, September 12, under the direction of the Montgomery County Medical Society. A series in pediatrics began in Elkhart, September 5, sponsored by the Elkhart County Medical Society.

KENTUCKY

Changes in Health Officers.—Dr. Robert L. Loftin, Pikeville, recently health officer of Pike County, has been appointed health officer of a new unit in Harrison County, with headquarters at Cynthiana.—Dr. Edward W. Kissel, Paintsville, has been named health officer of Lawrence County, with headquarters at Louisa.

Society News.—Dr. Coleman C. Johnston, Lexington, addressed the Bourbon County Medical Society, Paris, August 22, on "Changing Trends in the Problem of Peptic Ulcer."—Trigg County physicians entertained the Christian County Medical Society in Cadiz, August 20, with Drs. Burton A. Washburn Jr. and Orion Leon Higdon, Paducah, as the speakers on "Diagnosis of the Acute Surgical Abdomen" and "Diagnosis and Treatment of Ectopic Pregnancy" respectively.

LOUISIANA

New Society of Pathologists.—The Louisiana Association of Pathologists was recently formed. Included among the officers are Drs. Edwin H. Lawson, president; Bela Halpert, vice president, and Andrew V. Friedrichs, secretary-treasurer. All are from New Orleans.

Changes in Health Officers.—Dr. Louis A. Breffleil, Shreveport, has been assigned to the Lincoln Parish health unit as director to succeed Dr. Ralph H. Allen, Ruston, who has been transferred to Amite. Dr. Breffleil has been doing similar work in Franklin, St. Mary's Parish.

MASSACHUSETTS

Personal.—Dr. John W. Chamberlain, Belmont, has been appointed assistant director of the department of hygiene at Massachusetts Institute of Technology, Cambridge. Dr. Chamberlain has been an assistant in the department since 1937.

Dr. Kimberly Named Director of Riggs Foundation.—Dr. Charles H. Kimberly, an associate of the Austen Riggs Foundation, Inc., Stockbridge, for the last six years, has been appointed its medical director, according to the *New York Times*. He succeeds Dr. Horace K. Richardson, who resigned. Dr. Kimberly graduated at Harvard Medical School, Boston, in 1924, has served on the staffs of several hospitals and has had postgraduate study in Europe. Established by the late Dr. Austen F. Riggs, the foundation provides free treatment for needy psychoneurotic patients.

MICHIGAN

Personal.—Dr. Edwin L. McQuade, in charge of the typhoid control program in the bureau of epidemiology, state department of health, has resigned, it is reported.—Dr. Willard L. Quennell, Detroit, for twenty years superintendent of the Highland Park General Hospital, resigned to accept the superintendency of the Norfolk General Hospital, Norfolk, Va., effective September 1. He was honored at a dinner, August 14, given by members of the Highland Park Physicians Club and the staff and board of managers of the hospital and was presented with a matched set of saddle leather luggage.

Industrial Surgeons' Meeting.—The Michigan Association of Industrial Physicians and Surgeons will hold its annual meeting in Detroit, September 24, with sessions at the Harper Hospital and the Book-Cadillac Hotel. Included among the speakers will be:

- Dr. Carey Pratt McCord, Detroit, Responsibility of the Industrial Physician in Time of Military Mobilization.
- Dr. Alfred H. Whittaker, Detroit, History of Industrial Medicine and Surgery.
- Mr. Ben E. Kuechle, vice president and general claims manager of Employers Mutual Insurance Company, Wausau, Wis., Reporting Industrial Cases to the Insurance Carrier.
- Mr. Frederick G. Palliaer, deputy commissioner, Michigan Department of Labor, Medical Testimony Before the Department of Labor.
- Dr. Roy D. McClure, Detroit, Anoxia in Industrial Employees.
- Dr. John Ewart Caldwell, Detroit, Evaluation of Disability.
- Dr. John A. Caldwell, Cincinnati, Problems in Traumatic Surgery.
- Dr. Grover C. Penberthy, Detroit, Surgery of Tendons.

At the dinner Dr. Frank T. McCormick, Detroit, president, will give an address. Other speakers will include Mr. Harvey Campbell, Detroit Board of Commerce, "Responsibility of the Industrial Physicians in National Defense," and Dr. George M. Curtis, Columbus, Ohio, "The Doctor Takes a Vacation."

Committee on Scope of School Health Services.—A new committee designed to outline the scope and policy of school health services has been appointed by Eugene B. Elliott, state superintendent of public instruction, Lansing. The committee will be asked to recommend what kind and what amount of responsibility the schools should assume for health services, and to point out the implications of these health service activities for health teaching; suggest specific health service responsibilities for teachers, administrators and school health specialists, and suggest the kind of factual information and experiences in the health service area that should be included in the teachers' college curriculum. Members of the committee are:

- Dr. Eldred V. Thiehoff, state department of health, Lansing, chairman.
- Dr. Clarence D. Barrett, Mason, director, Ingham County health department.
- Vaughan Blanchard, Detroit, director, health and physical education.
- Dr. Benjamin W. Carey, Detroit, Children's Fund of Michigan.
- Otto W. Haisley, Ann Arbor, superintendent of schools.
- Kenneth A. Eslick, D.D.S., Ann Arbor, University of Michigan Dental School.
- Dr. Rockwell M. Kempton, Saginaw.
- Dr. Matthew R. Kinde, Battle Creek, Kellogg Foundation.
- Mildred Marshall, teacher, Walton Township school.
- Ella E. McNeil, R.N., Ann Arbor, University of Michigan.
- Dr. Joseph G. Molner, Detroit, department of health.
- Harold H. Wilcox, Reed City, Osceola County commissioner of schools.

The Infantile Paralysis Situation.—Quarantines imposed to prevent the spread of infantile paralysis in Dickinson and Iron counties, where numerous cases have occurred in the outbreak in the upper peninsula, were to be lifted September 13, newspapers reported. No new cases had been reported for several days, it was said. Opening of schools at Newberry in Luce County has been postponed until September 30, and at Marquette on Lake Superior schools opened September 10 after a week's postponement. Delta County schools were to remain closed till September 16. At Hastings in Barry County in the southern part of the state schools were closed September 10 for the remainder of that week, although health officials advised that closing was not necessary. It was stated that twenty-one cases had occurred in the county since January 1, five since September 1. In Lansing one classroom was closed after one pupil was found to be ill with the disease. The number of cases in the state for the month of August was 301, compared with 385 in August 1939. The state health department made available an airplane for the use of physicians in reaching patients and for transportation of patients to hospitals. Drs. Sidney D. Kramer, head of the department's virus research laboratory, Lansing, and Jerome T. Jerome, Traverse City, of its orthopedic consulting staff, went to the area to be at the call of physicians and health officers.

MINNESOTA

Medical Continuation Courses.—*Minnesota Medicine* announces a series of medical continuation courses at the Center for Continuation Study, University of Minnesota, Minneapolis, beginning with one on anesthesiology, September 23-25. Others in the group are:

- Health Problems of School Children, September 26-28.
- Traumatic Surgery, September 30-October 5.
- Medical Therapy in General Practice, October 7-12.
- General Surgery, November 4-9.
- Obstetrics, November 11-16.
- Proctology, November 11-16.

As enrolment is limited, those wishing to participate in the courses should register as far in advance as possible, according to the announcement. Address Dr. William A. O'Brien, University of Minnesota Hospitals, Minneapolis.

MISSOURI

Personal.—The Cole County Medical Society met jointly with dentists and druggists of Jefferson City at a picnic barbecue recently to honor four men of the three professions who had completed fifty years of service. The guests of honor were Drs. John F. Jones, Linn; William D. Townley, Chamois; Albert E. Hammen, D.D.S., Jefferson City, and Mr. Henry DeWyl, Jefferson City. Dr. Townley, whose father and grandfather were physicians, has practiced medicine in Chamois since 1879. Dr. Jones is the son of a physician; he has practiced in Linn since 1889. Dr. Hammen has practiced dentistry in Jefferson City since 1888. Mr. DeWyl, a druggist for fifty-three years, now operates a drugstore which was founded by his father, a physician.

NEW YORK

Annual District Meetings.—The annual meeting of the Third District Branch of the Medical Society of the State of New York was held at the Colonie Country Club near Albany, September 17, with the following speakers:

- Dr. Walter S. McClellan, Saratoga Springs, What Has Saratoga Spa to Offer in the Field of Therapy?
- Dr. Albert F. R. Andresen, Brooklyn, Gastric Hemorrhage.
- Dr. Temple S. Fay, Philadelphia, Observations on Human Refrigeration.
- Dr. Charles H. Rammekamp Jr., Boston, The Present Status of Sulfathiazole in the Treatment of Infections.
- Dr. L. Whittington Gorham, Albany, Advances in the Specific Treatment of Pneumonia During the Past Year.

At the annual meeting of the Sixth District Branch at Ithaca, September 19, the speakers were:

- Dr. John Maxwell Chamberlain, Oneonta, Recent Progress in Thoracic Surgery.
- Dr. Benjamin P. Watson, New York, Clinical Use of Ovarian Hormones.
- Dr. Colin M. MacLeod, New York, Clinical Use of the Sulfonamide Drugs.
- Dr. Thomas A. C. Rennie, Baltimore, The Psychoneuroses.
- Dr. Thomas A. Gonzales, New York, Sudden and Unexpected Deaths from Natural Causes.

New York City

Fund Available for Research.—The New York Academy of Medicine announces that \$1,500 is available from the Louis Livingston Seaman Fund for research in bacteriology and sanitary science. The committee that administers the fund, established by the will of Dr. Seaman, will receive applica-

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tions from either institutions or individuals up to October 15. The fund will be expended only in grants in aid for investigation or scholarships for research in bacteriology or sanitary science. Expenditures may be for technical help, aid in publishing original work and the purchase of necessary books or apparatus. Communications should be addressed to Dr. Wilson G. Smillie, chairman of the committee, 2 East One Hundred and Third Street, New York.

New Administration Building at Bellevue.—A new administration building for Bellevue Hospital, built at a cost of about \$3,000,000, was dedicated September 11. Speakers at the ceremonies included Dr. Sigismund S. Goldwater, commissioner of hospitals; Dr. Charles D. Crandall, deputy medical superintendent, in the place of Dr. William F. Jacobs, medical superintendent, who was unable to attend; Mrs. Henry James, president of the board of managers of the school of nursing; Col. E. W. Clark, commissioner of public works for the Federal Works Agency, which contributed about \$1,500,000 toward the building; and Mr. Newbold Morris, president of the city council. Besides administration offices, the building provides, among other facilities, quarters for about 250 interns, administrative offices and classrooms of the school of nursing, Episcopal, Catholic and Jewish chapels. Bellevue now has a ground area of about twelve city blocks, on which are eighteen major hospital buildings. It has eighty-nine wards, with accommodations for about 2,500 patients. In these wards 68,485 patients were cared for in 1939. There are 660 physicians on the visiting staff. The nursing division consists of 980 graduate nurses, the school of women nurses with 421 students and a school for men nurses with 122 students in a summer course.

NORTH CAROLINA

Society News.—At a meeting of the Catawba Valley Medical Society in Hickory, September 12, the speakers were Drs. George Aubrey Hawes, Charlotte, on "Traumatic Urology"; George Carlyle Mackie, Wake Forest, "Shock"; Abner M. Cornwell, Lincolnton, "Surgery of Traumatic Injuries," and James W. Davis, Statesville, "Medical Preparedness."—Dr. Louis H. Clerf, Philadelphia, addressed the Guilford County Medical Society, Greensboro, August 1, on "Clinical Significance of Hoarseness in Relation to Cancer of the Larynx."

OHIO

Annual Regional Meeting.—The ninety-sixth annual meeting of the Northwestern Ohio Medical Association will be held at Ottawa, October 1. The speakers will be Drs. Jacob Victor Greenebaum, Cincinnati, on "Status of Immunization Procedures in Infancy and Childhood"; Julien E. Benjamin, Cincinnati, "The Experience and Treatment of Pneumonias During the Past Five Years," and Fred W. Rankin, Lexington, Ky., "Cancer of the Lower Gastrointestinal Tract."

Society News.—Dr. Marion W. Coleman, Dayton, addressed the Greene County Medical Society, Xenia, August 1, on "Cystitis in Women."—Drs. Frederic G. Maurer, Lima, and Charles L. Barrett, Bellefontaine, addressed the Auglaize County Medical Society, St. Marys, August 8, on "Rheumatic Heart Disease" and "The Medical Care Plan of the Farm Security Program" respectively.—Dr. Russell L. Cecil, New York, addressed the Academy of Medicine of Cleveland, September 20, on "Present Status of Serum Therapy and Chemotherapy in the Treatment of Pneumonia."—Dr. Harold N. Cole, Cleveland, addressed the Mahoning County Medical Society, Youngstown, September 17, on "Precancerous Dermatoses and Malignancy: Diagnosis and Treatment."

Postgraduate Lectures in Various Towns.—The Ohio State Medical Association announced its third annual series of postgraduate lectures to be held in the following towns: Napoleon, Tiffin, Mansfield, Warren, Cadiz, Athens, Columbus, Wapakoneta, Lebanon and Portsmouth. Twelve lectures will be given in each town in groups of four. About twenty lecturers will present the following subjects:

The Child and His Heart.
Meningitides in Children.
Clinical Approach to the Positive Mantoux Test.
Management of Heart Failure in the Home.
The Anemic Patient.
Deficiencies and Anemia.
Practical Uses of Sulfanilamide and Its Derivatives.
Modern Treatment of Pneumonia.
Complications of the Common Cold.
Childhood Ear Infections: Proper Treatment to Prevent Deafness.
Emergency Treatment of Roadside Injuries.
Fractures and Pseudofractures of the Spine.

The series opened September 18 in some towns and will continue to December 5.

OREGON

State Medical Election.—Dr. William W. Baum, Salem, was named president-elect of the Oregon State Medical Society at the annual meeting in Eugene, September 4-7, and Dr. Karl H. Martzloff, Portland, was installed as president. Vice presidents are Drs. George E. Henton, Portland, reelected; Grover C. Belling, Salem, and John D. Rankin, Coquille. Dr. Morris L. Bridgeman, Portland, was reelected secretary.

PENNSYLVANIA

State Medical Meeting in Philadelphia.—The ninetyeth annual meeting of the Medical Society of the State of Pennsylvania will be held in Philadelphia, September 30 to October 3, under the presidency of Dr. Charles H. Henninger, Pittsburgh, and with headquarters at the Hotel Bellevue-Stratford. Guest speakers who will address general and section meetings will be:

Dr. Tom Douglas Spies, Cincinnati, Recent Advances in Vitamin Therapy.
Dr. Richard B. Cattell, Boston, The Management of Hyperthyroidism Complicated by Other Conditions.
Dr. Howard K. Gray, Rochester, Minn., Problems Associated with Surgery of the Biliary Tract.
Dr. Francis W. White, New York, Complications Incident to Paranasal Sinusitis.
Dr. Albert D. Ruedemann, Cleveland, Headache and Head Pain of Ocular Origin.
Dr. Borden S. Veeder, St. Louis, Pediatrics in Relation to the General Practitioner.
Dr. Lawson Wilkins, Baltimore, Studies of Hypothyroidism and Dwarfism in Childhood.
Dr. Eugene F. Traub, New York, Nevi, Melanoma and Skin Cancer.
Dr. George Gilbert Smith, Boston, Total Prostatectomy for Carcinoma of the Prostate.
Dr. Frederick C. Irving, Boston, Results of Treatment of 1,000 Consecutive Cases of Preeclampsia.
Dr. Thomas B. Magath, Rochester, Minn., Hydatid Disease in North America.

Philadelphia

Society News.—At the first fall meeting of the Philadelphia County Medical Society, September 18, the guest speakers were Dr. Haven Emerson, New York, on "Public Health and the Private Practitioner" and the Rev. Alphonse M. Schwitala, Ph.D., St. Louis, on "The Hospital and the Private Practitioner." Dr. Rufus S. Reeves, retiring president, made an address and Dr. Edward L. Bortz was installed as president.

Appointments at Temple.—Dr. Waldo E. Nelson, assistant professor of pediatrics, University of Cincinnati College of Medicine, Cincinnati, has been appointed professor and head of the department of pediatrics at Temple University School of Medicine. In the latter capacity he succeeds Dr. Thomas F. McNair Scott. Dr. Nina A. Anderson, recently resident in pediatrics at the Children's and Cincinnati General hospitals in Cincinnati, has been appointed assistant professor. Dr. John B. Bartram, resident physician at the Children's Hospital, Cincinnati, will also join the faculty at Temple.

VIRGINIA

Personal.—Dr. Francis I. Bloise, Alexandria, has been appointed chief surgeon to the state prison system on a full time basis. The full time status was authorized by the 1940 General Assembly.—Dr. John Bolling Jones, Petersburg, has been appointed a member of the state board of health.—Dr. Herbert T. Wagner Jr., recently assistant director of the Roosevelt Hospital, New York, has been appointed superintendent of the Stuart Circle Hospital, Richmond.

Special Society Elections.—Dr. Waverly R. Payne, Newport News, was elected president of the Virginia Obstetrical and Gynecological Society at the annual meeting, which was held during the joint meeting of the state medical societies of Virginia and West Virginia at White Sulphur Springs, W. Va., in July. Drs. Andrew M. Groseclose, Roanoke, and Henry C. Spalding, Richmond, are vice president and secretary, respectively. Dr. John M. Bishop, Roanoke, was elected president of the Virginia Pediatric Society at the same time; Dr. Emily Gardner, Richmond, and Edwin A. Harper, Lynchburg, were elected vice president and secretary, respectively. Dr. Henry H. Wescott, Roanoke, was elected president of the Virginia Orthopedic Society and Dr. Bernard H. Kyle, Lynchburg, was reelected secretary. Officers of the Virginia Radiological Society elected were Drs. Wright Clarkson, Petersburg, president; Clayton W. Eley, Norfolk, vice president, and Charles H. Peterson, Roanoke, secretary. Officers elected by the Virginia Urological Society are Drs. Samuel B. Cary, Roanoke, president; Linwood D. Keyser, Roanoke, vice president, and Charles M. Nelson, Richmond, secretary.

WASHINGTON

State Medical Election.—Dr. George W. Cornett, Yakima, was named president-elect of the Washington State Medical Association at the annual meeting in Tacoma and Dr. Homer D. Dudley, Seattle, was installed as president. Dr. Lyle A. Greenwood, Bellingham, was elected vice president and Dr. Vernon W. Spickard, Seattle, was reelected secretary. The 1941 convention will be held in Seattle.

WEST VIRGINIA

Society News.—A symposium on syphilis was presented at a meeting of the Cabell County Medical Society, Huntington, August 8, by Drs. Ray M. Bobbitt, Boyd F. Brown and Edward F. Reaser. —Drs. Martin L. Bonar and Pat A. Tuckwiller, Charleston, addressed the Central West Virginia Medical Society, Webster Springs, August 21, on "Skin Manifestations of Internal Disorders" and "The Anxiety Tension State" respectively.

GENERAL

Fellowship for Research with Electron Microscope.—The National Research Council recently announced a new fellowship in electron microscope research established by the RCA Manufacturing Company for work to be carried on in the company's laboratories at Camden, N. J. It was announced that preference would be given "to versatile young men of United States citizenship, who have sound training in microbiology, a doctor's degree (Ph.D. or M.D.) and a record of original work." Applications are to be sent to the division of biology and agriculture, National Research Council, Washington, D. C.

American Public Health Association.—The sixty-ninth annual meeting of the American Public Health Association will be held in Detroit, October 6-11, under the presidency of Dr. Edward S. Godfrey Jr., Albany, N. Y., commissioner of health of New York State. Among addresses to be given in general and in section meetings will be the following:

- Dr. John R. Paul, New Haven, Conn., Rheumatic Fever—Factors in Its Occurrence.
- Dr. Clarence D. Selby, Detroit, The Renaissance of Industrial Hygiene.
- Dr. Cyrus C. Sturgis, Ann Arbor, Mich., Some Important Factors in the Etiology of the Anemias.
- Dr. John B. Youmans, Nashville, Tenn., An Assessment of the Nutrition of a Rural Population in Tennessee.
- Dr. Richard E. Shope, Princeton, N. J., The Silent Intermediate Host Reservoir as Exemplified in Bovine Pseudo-Rabies and Swine Influenza.
- Dr. Julius H. Hess, Chicago, Essentials in the Care of Premature Infants.
- Dr. Everett D. Plass, Iowa City, Organization, Supervision and Objectives of Prenatal Medical Supervision: Are They Being Met by the Average Prenatal Clinic?
- Dr. Henry E. Meloney, Nashville, Tenn., The Recent Extension of Endemic Typhus Fever in the United States.
- Dr. Frank L. Horsfall Jr., New York, The Present Status of Knowledge Concerning Influenza.
- Dr. George Baehr, New York, Public Health Importance of the Intravenous Drip Method for Treatment of Syphilis.

At a special session Wednesday afternoon, October 9, on "The Control of Venereal Diseases in a National Defense Program" Dr. Thomas Parran, Surgeon General, U. S. Public Health Service, Washington, D. C., will preside and speakers will include Major Gen. James C. Magee, Surgeon General, U. S. Army, and Rear Admiral Ross T. McIntire, Surgeon General, U. S. Navy, on the relationship of the health of civilians to the efficiency of their respective services. Dr. Waller S. Leathers, Nashville, Tenn., will be installed as president and will speak on "Public Health in National Defense." Henry F. Vaughan, Dr.P.H., Detroit, will give the second annual Delta Omega Lecture on "The Way of Health." The seventh Institute on Public Health Education will be held on Sunday October 6. Among speakers at general sessions will be Drs. William W. Bauer, director of the Bureau of Health Education, American Medical Association, Chicago, on "The Philosophy of Public Health Education," and Charles V. Akin, Washington, D. C., "The Status of Public Health Education."

Instruction in Nursing of Patients with Infantile Paralysis.—The National Foundation for Infantile Paralysis has published a pamphlet, "Nursing Care of Patients with Infantile Paralysis," by Jessie L. Stevenson, R.N., consultant in orthopedic nursing, National Organization for Public Health Nursing, New York. It is illustrated with line drawings showing various positions for the patient, apparatus and appliances for use in the acute stage and in convalescence. It was prepared by the public health nursing organization as a part of a project in orthopedic nursing sponsored by the foundation and is intended to assist the public health nurse and others responsible for home care of patients with infantile paralysis during

and following an epidemic. Copies are available free on request. Address the National Foundation for Infantile Paralysis, 120 Broadway, New York.

Meeting of Obstetricians, Gynecologists and Abdominal Surgeons.—The fifty-third annual meeting of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons will be held at The Elms, Excelsior Springs, Mo., September 26-28, under the presidency of Dr. James R. McCord, Atlanta, Ga. Dr. Ernst James Heyman of Radiumhemmet and also docent in obstetrics and gynecology at the Caroline Institute in Stockholm, Sweden, will deliver the Joseph Price Oration. Dr. Erwin O. Strassmann, Houston, Texas, has received the association's Foundation Prize and will present his thesis on "The Theca Cone and Its Tropism Toward the Ovarian Surface, a Typical Feature of Growing Human and Mammalian Follicles." Among other speakers will be:

- Dr. Frederick H. Falls, Chicago, A Skin Reaction for the Diagnosis of Pregnancy.
- Dr. Charles O. McCormick, Indianapolis, The Effect of Obstetrical Anesthesia on the Newborn Infant.
- Dr. Clifford B. Lull, Philadelphia, Pubertas Praecox Due to Ovarian Tumors.
- Dr. David Hadden, Berkeley, Calif., Clinical Experience with Testicular Extract in Obstetrics and Gynecology.
- Dr. William A. Coventry, Duluth, Minn., Actinomycosis of the Ovary.
- Dr. Frank R. Smith, New York, Nativity and Carcinoma of the Cervix.

Conference on Tuberculosis.—The Mississippi Valley Conference on Tuberculosis and the Mississippi Valley Sanatorium Association will meet at the Lowry Hotel, St. Paul, October 2-4. The program will include an x-ray conference, presided over by Dr. John H. Skavlem, Cincinnati, and the following papers:

- Dr. Jack Sanford Kruglick, Chicago, A Nationwide Survey of Food Handlers and Infections.
- Drs. William M. Kinney, Joplin, Mo., and Jesse E. Douglass, Webb City, Silicotuberculosis in Missouri.
- Dr. George McL. Waldie, Ishpeming, Mich., Industrial Clinic Examinations.
- Dr. James D. Adamson, Winnipeg, Man., Canada, Examination of the Lungs in Recruits.
- Drs. Carl C. Birkelo and Bruce H. Douglas, Detroit, The 4 x 5 Film in Case Finding.
- Dr. David O. N. Lindberg, Decatur, Ill., Relative Usefulness of 35 Mm. Films in Case Finding.
- S. Reid Warren Jr., Moore School of Engineering, Philadelphia, Comparative Value of Chest Roentgenograms Made on Films and on Paper.
- William H. Feldman, D.V.M., and Dr. Archie H. Baggenstoss, Rochester, Minn., The Detection of Tubercle Bacilli in Latent Lesions and in Normal Tissues of the Human Lung.
- Dr. Herman E. Hilleboe, St. Paul, Tuberculosis in Public Institutions.

The Minnesota Public Health Association will hold its annual meeting in conjunction with the conference.

American Roentgen Ray Society.—The forty-first annual meeting of the American Roentgen Ray Society will be held at the Hotel Statler, Boston, October 1-4. At his installation as president of the society, Dr. Merrill C. Sosman, Boston, will speak on "Specialization in Roentgenology." According to the preliminary program there will be symposiums on diagnosis and treatment of carcinoma of the larynx; classification, treatment and prognosis of carcinoma of the thyroid; unusual forms of pulmonary disease; unusual gastrointestinal lesions and unusual sources of gastrointestinal hemorrhage. Miscellaneous topics will include:

- Dr. Robert Drane, Savannah, Ga., An Unusual Intracranial Foreign Body.
- Drs. George M. Wyatt and Sidney Farber, Boston, Neuroblastoma.
- Dr. Karl Kornblum, Philadelphia, Polyostotic Fibrous Dysplasia.
- Dr. Barton R. Young, Philadelphia, Body Section Roentgenography (Planigraphy) in Diseases of the Respiratory Tract.
- Dr. Cornelius G. Dyke, New York, Cranial Laminagraphy.

Dr. George W. Holmes, Boston, will receive the Caldwell Medal, Tuesday evening, following his delivery of the Caldwell Lecture on "The Development of the Science of Roentgen Technic." Gerry B. Schnelle, D.V.M., Boston, will deliver a clinical lecture on "Roentgen Rays in Veterinary Medicine" Wednesday afternoon.

LATIN AMERICA

Vital Statistics in Uruguay.—Forrest E. Linder, of the staff of the division of vital statistics of the Bureau of the Census, U. S. Department of Commerce, Washington, D. C., recently assisted the government of Uruguay to organize a statistical office in the ministry of public health. Transcript forms were prepared for civil mortality records, coding and tabulating procedures were developed and a manual of instructions for clerks was written, according to the Registrar, the bulletin of the census bureau. Mr. Linder made the trip as consulting statistician of the Pan American Sanitary Bureau. He visited also health agencies in Peru, Argentina, Brazil and Haiti.

Society News.—The First Brazilian Congress of Gynecology and Obstetrics was to be held in Rio de Janeiro, September 8-15. Subjects to be discussed were recent advances in gynecologic hormonology, diagnosis and treatment of cervical cancer, endocrinopathy in obstetrics and social aspects of obstetric assistance.—The second Latin American Congress of Criminology will be held in Santiago, Chile, Jan. 19-26, 1941, under the auspices of the University of Chile and the Institute of Penal Science. Among the subjects of medical interest to be discussed will be blood groups and their importance in criminology, classification of mental diseases with relation to their medicolegal importance, eugenics and criminology, psychoanalysis and criminology.

FOREIGN

Joseph Meister Dies.—Joseph Meister, the first person to receive the antirabies treatment from Pasteur in 1885, is reported to have committed suicide in Paris. Meister became Pasteur's assistant at the Pasteur Institute and after the scientist's death remained there as a guard.

CORRECTION

Superior Pulmonary Sulcus Tumor.—In the editorial "The Superior Pulmonary Sulcus Tumor of Pancoast" in THE JOURNAL, August 24, page 617, reference 5 in small type at the bottom of the second column should read: Steiner, P. E., and Francis, B. F.: Primary Apical Lung Carcinoma, *Am. J. Cancer* 22:776 (Dec.) 1934.

Government Services

Army Personals

Col. James E. Baylis, Medical Corps, U. S. Army, who for the last year has been executive officer in the Surgeon General's Office, was relieved of that assignment September 1 and ordered to Atlanta, Ga., where he will become corps area surgeon. The new executive officer in the Surgeon General's Office will be Col. Larry B. McAfee, who previously was executive officer at the Fitzsimons General Hospital, Denver. He will be succeeded by Col. Omar H. Quade.

Dr. Neal Made Chief of Division of Industrial Hygiene

Dr. Paul A. Neal, surgeon, U. S. Public Health Service, and a member of the staff of the National Institute of Health, Bethesda, Md., has been detailed as chief of the division of industrial hygiene of the institute, according to a recent release from the public health service. He succeeds Dr. Royd R. Sayers, who went to the bureau of mines several months ago. Dr. Neal, who is 39 years of age, graduated at Vanderbilt University School of Medicine, Nashville, in 1927.

Changes in Bureau of Animal Industry

The biochemical division of the Bureau of Animal Industry of the U. S. Department of Agriculture has been merged with the pathologic division and the animal nutrition division. The position of chief of the biochemical division has not been filled since the recent death of Robert M. Chapin. Activities of the division relating to animal diseases were transferred to the pathologic division and those relating to the nutritive value of animal products were assigned to the animal nutrition division at the Beltsville Research Center, Beltsville, Md.

Medicomilitary Training Course for Reserve Officers

The twelfth annual inactive status training course for medical department reserve officers of the U. S. Army and Navy will be held at the Mayo Foundation, Rochester, Minn., October 6-20. As in former years, special work in clinics and hospitals will be offered during the morning hours for those asking special assignments. Presentations of selected subjects in military medicine are scheduled. There will be appropriate sections or special courses for officers of the dental and veterinary corps. All medical department reserve officers on the

active list are eligible for enrolment. Approved applicants will be enrolled on the recommendation of the surgeon of the seventh corps area or the surgeon of the ninth naval district. Applications should be made at an early date and should be forwarded through the respective reserve headquarters of the officers concerned.

Navy Personals

Capt. Dallas G. Sutton, Medical Corps, U. S. Navy, has been ordered to duty in command of the Naval Medical School in Washington. Capt. Luther Sheldon Jr. has been ordered to duty as assistant chief of the bureau of medicine and surgery. Capt. William Chambers has been relieved from command of the Naval Medical School and ordered to command the hospital and school at San Diego, relieving Capt. Edward U. Reed, who goes to duty as medical officer of the twelfth naval district. Capt. George S. Hathaway was relieved from duty at the naval hospital in Newport and ordered to the Marine Corps base in San Diego.

Government Needs Medical Officers

The government needs medical officers. On August 5 the Civil Service Commission announced an examination for three grades of medical officer positions, ranging in salary from \$3,200 to \$4,600 a year, for a number of defense agencies as follows:

Public Health Service
Food and Drug Administration
Veterans Administration
Civil Aeronautics Authority
Indian Service

The examination includes fourteen different optional branches of medicine, giving opportunities to appointees to advance in their chosen specialty. Applicants will not be required to report for an assembled written test but will be rated on their sworn statements regarding their education, experience and fitness, subject to corroborative evidence. Applicants must have been graduated with an M.D. degree from a recognized medical school and must have had professional experience in one of the following optional branches:

- | | |
|---|--|
| 1. Aviation medicine | 10. Pathology, bacteriology and roentgenology (singly or combined) |
| 2. Cardiology | 11. Public health: |
| 3. Dermatology | (a) General |
| 4. Eye, ear, nose and throat (singly or combined) | (b) Venereal |
| 5. General practice | 12. Surgery: |
| 6. Industrial medicine: | (a) General |
| (a) Gas analysis or toxic dust | (b) Orthopedic |
| (b) General | (c) Chest |
| 7. Internal medicine and diagnosis | 13. Tuberculosis |
| 8. Medical pharmacology | 14. Urology |
| 9. Neuropsychiatry | |

For some positions in the Veterans Administration, applicants for positions of associate medical officer paying \$3,200 a year need not have had experience other than one year of internship.

The commission is finding it difficult to obtain enough qualified applicants for this examination. Applications will be received until further notice. The filling of these positions is of the utmost importance to the success of the national defense program, and physicians who are able to meet the announced requirements are urged to apply.

An examination has also been announced for two classes of junior medical officer positions paying \$2,000 a year (the one rotating internship, the other psychiatric resident positions) at St. Elizabeths Hospital, Washington, D. C. For the rotating internship positions applicants must be fourth year students in a class A medical school, but before entrance on duty they must furnish proof that they have successfully completed, prior to June 1941, a four year course in such a school. For the psychiatric resident positions applicants must have completed their fourth year of study in a class A medical school subsequent to Dec. 31, 1937, and must have a degree of B.M. or M.D. Before entrance on duty they must show that they have successfully completed an accredited rotating internship of at least one year. The closing date for receipt of applications is October 17 for states east of Colorado and October 21 for Colorado and states westward.

The requirements for all these positions are explained in detail in the examination announcements, which, with the application forms and further information, may be obtained from the secretary of the Board of U. S. Civil Service Examiners at any first or second class post office or from the U. S. Civil Service Commission, Washington, D. C., or from any of the commission's district offices.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 11, 1940.

Medical Service in Factories Made Compulsory

An order is to be made by the minister of labor which will require arrangements to be made in any named factory for part or whole time physicians, nurses and officers to supervise the welfare of the employees. The general council of the Trade Union Congress has welcomed the proposal as the beginning of a factory and welfare service. The council thinks that it might be extended so as to establish the principle of a state medical service.

Government to Pay Civilians for War Injuries

Air attacks have brought civilians into the same danger from air attack as soldiers and so the government has made similar arrangements both for the treatment of casualties and for payments for disablement from injury. The scheme for civilians applies to members of civil defense organizations injured while on duty and to all other civilians who depend on their earnings for a livelihood. It also applies to immediate dependents if the war injury is fatal. The grants in respect to injury are (1) a temporary injury allowance if the injury causes incapacity for work for not less than seven days; (2) a pension with family allowances if the injury results in serious or prolonged disablement. The temporary injury allowance for a married man is \$8 a week, for a single man \$5, for a woman \$4.50. Pensions for serious or prolonged disablement will be at the same rates as in the fighting services. For permanent disablement a man will receive \$8 a week, a woman \$6.

Our Health After Nearly a Year of War

In the *Sunday Times* Lord Horder takes stock of the health of the nation after nearly a year of war. While war is an evil thing, he thinks it has done good, like a hormone, in "activating the whole chemistry of the nation." It has had an accelerating effect on efforts we were making to improve the condition of the people. As far as physical health is concerned, Lord Horder finds that it has kept at an unusually high level. The comparative mildness of last winter's influenza epidemic was a blessing. Cerebrospinal fever, an epidemic hazard of wartime, though it showed itself in the early part of this year, died down quickly and chemotherapy reduced its fatality to an unprecedented level. None of the common infectious diseases attained serious dimensions. Tuberculosis has shown no material increase, and even "the camp follower of war," venereal disease, has not got out of hand. Deficiency diseases have not bothered us. For the control of all these plagues the intensified activity of the health services may take no small credit. The evacuation of children from the danger areas, concerning which so many fears were anticipated, was, from the health angle, a huge success. Compared with the previous year the incidence of diphtheria and scarlet fever fell to two thirds of that in 1938 and poliomyelitis to just over one third. The children benefited enormously in health.

This satisfactory condition of our national health Lord Horder ascribes much more to the increasingly favorable conditions of the people during the years preceding the war than to the care exercised during it. The contrast with Germany is marked. Dr. Gumpert, the author of "Heil Hunger," summarizes the results of six years of Nazi rule as "an increased death rate, a falling birth rate, growing criminality, an increase in drunkenness, venereal disease, tuberculosis, food poisoning and a doubling of mental disease." Gumpert considers Nazi rule "the most unwholesome political system ever born in the brain of man."

In physique we are far better prepared than was the enemy at the outset of war and we have kept well ahead of him. But now comes the testing time. Vigilance in health must include the worker as well as the fighter. That this is already apparent to the mind of the minister of health is shown by his memorandum on "Hours of Work and Maximum Output" and his exercise of emergency powers with regard to medical supervision of factories and the first aid and welfare services connected with them. The vital question of fatigue is being carefully watched.

WHERE BRITAIN LAGS

But, says Lord Horder, we must watch our national vices and repent of them in time. "We British are not scientifically minded; we pay lip service to research but are not really interested; method is not one of our national characteristics. Perhaps nature has spoilt us; anyway, in the absence of a strong incentive we are casual and lazy minded and we have left for a long time entirely unimplemented many of the discoveries that science hands out to us." As an example he gives neglect of immunization against diphtheria. It is some years since the principles of diet which underlie nutrition were established. Yet they are only beginning to be reflected either in the food of the people or in the kind of foodstuffs that the country produces. Now comes "total war" and so we must be efficient. We inquire how this is to be done and ask questions the answers to which have been shouted for years into deaf ears. We are turning to the experts and saying "Come, do your stuff; we need you." To their credit the experts do not resent our neglect and fail us. "Let a future generation say of this that it won the war because it realized the importance of guns and butter."

The Closing of the Burma Road and the Chinese Red Cross

The Chinese ambassador in London has received a telegram from Dr. Robert Lim, the distinguished pathologist and director of the Chinese Red Cross Medical Relief Commission, asking him to appeal to the British Red Cross, the British churches and the British government to exempt Chinese Red Cross equipment, supplies, vehicles and fuel in Burma from all restrictions in accordance with the spirit of the Geneva convention. If the passage of vehicles and fuel for medical relief is prohibited, the Chinese Red Cross will be deprived of all means of transporting medical material to the interior or running its ambulances. It may be remembered that the British government, under Japanese pressure at this critical time, consented to close the Burma road to the passage of munitions of war for three months, the suggestion being made that such closure would facilitate peace negotiations.

Dr. Hingston Fox, Balneologist

Dr. Hingston Fox, a leading balneologist, has died in his eighty-second year. Of Quaker stock he was the sixth in an unbroken line of physicians, the medical tradition of which is still preserved. His elder brother Richard Hingston Fox was, like him, a fellow of the Royal College of Physicians and was the medical historian of the Hunterian Society and author of "Dr. John Fothergill and his Friends." All his six brothers were physicians and also his son and daughter. Educated at the London Hospital, he specialized early in balneology, which he began to practice at Strathpeffer Spa in Scotland. On this he wrote a handbook and guide, "Strathpeffer Spa, its Climate and Waters." Eventually he settled in London, where he succeeded Sir Hermann Weber as the leading balneologist. He played a prominent part in the physical treatment of soldiers and sailors of the war of 1914-1918 who suffered from chronic arthritic complaints. He was honorary president of the *Ligue internationale contre le rhumatisme* and the founder and editor of the *Archives of the International Society of Medical Hydrology and Climatology*. He also wrote the "Principles and Practice

of Medical Hydrology," "Outlines of Medical Hydrology," "Physical Remedies for Disabled Soldiers" and "The Causation and Treatment of Chronic Rheumatism" (with Jan van Breemen of Amsterdam). A great pioneer of physical therapy, he experienced much of the disappointment of the reformer in a world, which will not share his enthusiasms.

BUENOS AIRES

(From Our Regular Correspondent)

Aug. 16, 1940.

Vitamin A Deficiency in Vascular Diseases

The question of vitamin A deficiency in vascular diseases was investigated in Buenos Aires by Prof. Dr. Mariano R. Castex in collaboration with his assistants Prof. Dr. Alfredo V. Di Cio and M. Schteingart, who made a report to the National Academy of Medicine. The vitamin A and the provitamin (carotene) contents were determined according to Linquist's technic in the blood serum of twenty-eight patients with vascular diseases and were compared with the normal values. In one half of the cases with intermittent claudication there existed a noticeable A hypovitaminosis of various degrees. Carotene underwent similar changes but in a smaller percentage. The results were even more noticeable in persons with gangrene of the lower extremities; in eight of these, only one had a normal value in the serum with the same proportionate reduction in carotene. The relationship of these changes to the vascular disease are not explained as yet.

Ulcerative Colitis and Spirochetes

The problem of colitis ulcerosa and spirochetes was investigated by Prof. Carlos Bonorino Udaondo, director of a large research laboratory in Buenos Aires, who reported the investigations in the *Archivos argentinos de enfermedades del aparato digestivo y de la nutrición*. Spirochetes are found in the stools of normal persons more frequently in tropical than in other regions of the globe. Whereas the diplostreptococcus of Bergen is found in numerous cases of chronic ulcerative colitis, the pathogenic character of spirochetes in the same disease is not as definitely established. It is assumed that the saprophytic spirilla of the saliva are swallowed and in the intestine, at sites which are already otherwise diseased, they become pathogenic; thus there are amebospirillar dysenteries and dysenterospirillar dysenteries. Among sixteen cases of ulcerative colitis there were seven in which the so-called diplostreptococcus and two in which *Spirochaeta eurygyrata* (Werner) was isolated. Oral and parenteral arsenic therapy, without other special treatment, produced cure within a few days. The spirilla, which previously were found practically in pure culture deep in the ulcerations, had disappeared. The value of this procedure is proved by a control case in which the arsenic therapy was unsuccessful, since few or no spirochetes were present.

Brief Items

In the early part of 1941 the second inter-American congress for endocrinology will be held in Montevideo (Uruguay), as had been decided at the first one in Rio de Janeiro. Dr. Juan C. Mussio Fournier, minister of public health, will be the chairman. All directors and deans of the faculties of medicine of American universities have been invited.

In Córdoba, provincial capital in northern Argentina, a cancer institute will be erected, for the construction of which 600,000 pesos (\$178,620) has been made available by the government.

Deaths

Prof. Carlos G. Malbrán died in Buenos Aires on August 1. He had made extensive bacteriologic and hygienic studies under Pettenkofer, Koch and Behring in Germany and under Roux in France. He was the first who held the chair for bacteriology

in Buenos Aires; he was president of the health department of Argentina and held other important offices. In 1899 he combated plague in Paraguay and introduced the organization for the control of leprosy in Argentina. He also did valuable work in the campaign against malaria.

Prof. Dr. Eduardo Rabello, a well known dermatologist, died in Rio de Janeiro, August 8. He was a member of the International Leprosy Committee, of the International League Against Venereal Diseases and founder and director of the Foundation Gaffrée Guinle. He also studied and published books on ancylostomiasis, dermatomycosis, leishmaniasis and syphilis.

Marriages

ELLIS DUNCAN JR., Louisville, Ky., to Miss Marie Ernst Walmsley of Brooklyn at Falmouth, Mass., August 24.

FRED DAWSON REYNOLDS to Miss Violet Opal Barnett, both of Montgomery, Ala., at Memphis, Tenn., August 25.

JAMES BARCLAY DONALDSON, Jackson, Miss., to Miss Elizabeth Ann Gartner at Columbia, Tenn., August 21.

JAMES STERLING RUFFIN JR., Knoxville, Tenn., to Miss Kathryn Witherington of Covington, August 20.

FRANCIS CLABURN McLANE, Calhoun Falls, S. C., to Miss Mary Bowers Kinsey at Walterboro, August 10.

ANGELO WALTER BENJAMIN THEOBOLD CIANI, Iowa City, to Miss Ruth Bowman of Guttenberg, August 24.

VICTOR F. WOLDMAN, Cleveland, to Miss Carolin Mahler Heller of Cleveland Heights, Ohio, August 8.

JEAN KRUMHINE FIELD, Aliquippa, Pa., to Bernard Otis Black, D.D.S., of Toledo, Ohio, June 15.

ALBERT ERNEST RATH, Wooster, Ohio, to Miss Dorothy Paisley Snure of Lakewood, August 16.

TRAVIS SMITH, Winters, Texas, to Miss Mary Katherine Lewis of Houston at Temple, June 23.

JOHN AMOS CONLEY, Wilmette, Ill., to Miss Marie Natalie Cashatt at High Point, N. C., in June.

ALBERT ARCHER PARRISH to Miss Annie Marie McAdams, both of Durham, N. C., August 16.

JAMES W. TANKARD, Hilton Village, Va., to Miss Eileen Looney of Jenkins, Ky., in August.

MARCUS A. PIERSON JR., Galveston, Texas, to Miss Gladys Daly of Opelousas, La., in August.

W. VINCENT MEYER, Everett, Wash., to Miss Dorothy Gilmore of Butte, Mont., June 22.

LESLIE M. CHAFFEE, Coupeville, Wash., to Miss Edna Vander Stoep of Oak Harbor, June 24.

JOSEPH S. SKOBBA, to Miss Hope Toman, both of Indianapolis, in Fort Wayne, Ind., August 1.

WILLIAM H. HOLLINSHEAD, Minneapolis, to Miss Mary Waddell of St. Paul, July 16.

ERNEST C. ASBURY, New Baden, Ill., to Mrs. Josephine L. Asbury of O'Fallon recently.

WELDON P. CHANDLER, Asheville, N. C., to Miss Athylene Briggs of Mars Hill in June.

WALTER LEWINNEK, Mason City, Ill., to Miss Beryl Nelson of Antigo, Wis., August 12.

THOMAS N. MEADE, Goldendale, Wash., to Miss Roselia Turley of Yakima, June 22.

LAWRENCE H. MILLER, Bradford, Pa., to Miss Ann Thompson of Wilkinsburg, June 15.

HERMAN HINDIN, Ritzville, Wash., to Miss Virginia Larse of Wenatchee, June 17.

HOMER B. GABLE, Monticello, Ind., to Mrs. Helen Bennett of Logansport, August 7.

JOHN JOSEPH FRANCIS to Miss Lidie Shaw, both of Nashville, Tenn., June 20.

CREG S. HOYT JR., Grove City, Pa., to Miss Ruth E. Honk, June 18.

NED B. GRINER, Circleville, Ohio, to Miss Mary Agnes Thaw in June.

RODNEY B. HEARNE to Miss Dorothy Leede, both of Seattle, July 3.

Deaths

Robert G. Sayle, Milwaukee; Rush Medical College, Chicago, 1885; member of the State Medical Society of Wisconsin; fellow of the American College of Surgeons; past president of the Milwaukee County Medical Society; for many years on the staff of the Wisconsin College of Physicians and Surgeons and the Marquette University School of Medicine as instructor of anatomy, surgical anatomy and clinical surgery; surgeon to the Milwaukee, Milwaukee Children's, Johnston Emergency, and Deaconess hospitals; aged 80; died, August 1, of coronary occlusion.

Oscar Addison Mack McKimmie, Washington, D. C.; Columbian University Medical Department, Washington, 1891; member of the Medical Society of the District of Columbia; formerly clinical professor of laryngology and otology at the George Washington University School of Medicine; fellow of the American College of Surgeons; aged 72; attending surgeon to the Episcopal Eye, Ear and Throat Hospital, where he died, August 7, of uremia and cardiovascular renal disease.

Virgil Ernest Dudman Ⓢ Portland, Ore.; Northwestern University Medical School, Chicago, 1914; associate clinical professor of obstetrics and gynecology and formerly instructor at the University of Oregon Medical School; fellow of the American College of Surgeons; president of the Emanuel Hospital; on the gynecology staff of the Multnomah Hospital; on the visiting staff of St. Vincent's Hospital; aged 55; died, August 5, of subacute bacterial endocarditis.

Forbes Hawkes Ⓢ New York; College of Physicians and Surgeons, medical department of Columbia College, New York, 1891; member of the American Urological Association; fellow of the American College of Surgeons; consulting surgeon to the Presbyterian and Flower and Fifth Avenue hospitals, New York, Flushing (N. Y.) Hospital, Nassau Hospital, Mineola, St. Joseph's Hospital, Far Rockaway; aged 74; died, August 24, of coronary thrombosis.

Floyd Jerome Atwell Ⓢ Cooperstown, N. Y.; Albany (N. Y.) Medical College, 1907; member of the House of Delegates of the American Medical Association, 1937-1938; served during the World War; secretary of the Otsego County Medical Society; was town and village health officer; on the staff of the Mary Imogene Bassett Hospital; aged 55; died, August 24, of embolism following an operation for appendicitis.

Numa Pompilius Garfield Adams, Washington, D. C.; Rush Medical College, Chicago, 1924; dean since 1929 and professor of medicine since 1930 at the Howard University College of Medicine; at one time a member of the staff and director of the heart clinic at the Provident Hospital, Chicago; aged 55; died, August 29, in the Albert Merritt Billings Hospital, Chicago, of pneumonia following an operation.

Mary Elizabeth Halsall, Winthrop, Mass.; Tufts College Medical School, Boston, 1903; member of the Massachusetts Medical Society; aged 75; on the courtesy staff of the Winthrop Community Hospital, Chelsea (Mass.) Memorial Hospital, Whidden Memorial Hospital, Everett, and the New England Hospital for Women and Children, Boston, where she died, August 1, of bronchopneumonia.

Ralph Waldo Westhampton, N. Y.; University of the City of New York Medical Department, 1882; fellow of the American College of Surgeons; consulting gynecologist to the Lebanon and Jewish Maternity hospitals, New York, Nyack (N. Y.) Hospital, Rockaway Beach (N. Y.) Hospital and the Southampton (N. Y.) Hospital; aged 79; died, August 6, of arteriosclerotic heart disease.

Robert Warren Miller Ⓢ Los Angeles; College of Physicians and Surgeons, Keokuk, Iowa, 1876; Bellevue Hospital Medical College, New York, 1887; past president of the Los Angeles County Medical Society; for many years on the staffs of the California Hospital and the Methodist Hospital; aged 90; died, August 6, of cerebral hemorrhage.

Mary Jeannette Kearsley Ⓢ Chicago; Woman's Medical College, Chicago, 1888; past president of the Aux Plaines branch of the Chicago Medical Society; formerly on the staff of the Women's and Children's Hospital; for many years on the staff of the West Suburban Hospital, Oak Park, Ill.; aged 73; died, July 7, of coronary thrombosis.

Zebud MacKay Flinn, Prescott, Ariz.; Dalhousie University Faculty of Medicine, Halifax, N. S., Canada, 1932;

served with the Canadian Army in the Royal Flying Corps during the World War; aged 41; died, August 3, in the Presbyterian Hospital, San Juan, Puerto Rico, of spontaneous subarachnoid hemorrhage.

Jacob Myer Berris, Detroit; Detroit College of Medicine and Surgery, 1917; member of the Michigan State Medical Society; assistant instructor in clinical medicine at the Wayne University College of Medicine; for many years on the staff of the Grace Hospital; aged 44; died, August 8, of coronary thrombosis.

Henry William Morsch Ⓢ Woodhaven, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1904; on the staffs of the Lutheran and Bushwick hospitals, Brooklyn; aged 57; died, July 30, in the New York Post-Graduate Hospital of coronary occlusion and prostatectomy.

Henry Levi Davis, Rockford, Ill.; St. Louis University School of Medicine, 1906; member of the Illinois State Medical Society; veteran of the Spanish-American War; aged 61; died, August 6, in St. Anthony Hospital of perforation of the esophagus and aorta due to a chicken bone which he swallowed.

James Meade Atkinson Ⓢ Eaton, Ind.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1893; on the staff of the Ball Memorial Hospital, Muncie, and the Blackford County Hospital, Hartford City; aged 77; died, August 12, of coronary occlusion.

Samuel Milton Wendt Ⓢ Chehalis, Wash.; Minneapolis College of Physicians and Surgeons, medical department of Hamline University, 1897; at one time health officer of Kittitas County; on the staff of St. Helen's Hospital; aged 68; died, August 1, of coronary disease.

Arno Edward Bohm, Akron, Ohio; University of Wooster Medical Department, Cleveland, 1907; member of the Ohio State Medical Association; served during the World War; aged 60; on the staff of the People's Hospital, where he died, August 12, of myocarditis.

Hubert Thomas Elders Ⓢ Lieutenant, M. C., U. S. Army, Columbia, S. C.; Medical College of the State of South Carolina, Charleston, 1936; was commissioned a first lieutenant in the regular army in 1938; aged 33; was killed, August 18, in an airplane accident.

Wilson Randolph Ⓢ Detroit; Detroit College of Medicine, 1906; formerly associate professor of ophthalmology at his alma mater; fellow of the American College of Surgeons; on the staff of St. Mary's Hospital; aged 62; died, August 2, of coronary thrombosis.

Boney Wells Page Ⓢ Trenton, N. C.; Medical Department of Tulane University of Louisiana, New Orleans, 1909; first rural whole time health officer in North Carolina in Lumberton, Robeson County, from 1912 to 1917; aged 63; died, August 1, of heart disease.

Daniel Andrew Nolan Ⓢ Middletown, Conn.; Medico-Chirurgical College of Philadelphia, 1895; served during the World War; on the staff of the Middlesex Hospital; aged 68; died, August 2, of cerebral hemorrhage and diabetes mellitus.

Victor Bodine Ayers, Buena Vista, Colo.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1892; served during the World War; aged 69; died, August 5, in the Red Cross Hospital, Salida, of mesenteric thrombosis.

Walter C. Byrne, Elmira, N. Y.; Georgetown University School of Medicine, Washington, D. C., 1892; member of the Medical Society of the State of New York; at one time county coroner; aged 70; died, August 15, of coronary occlusion.

Henry Clay Hornsby, Burning Springs, Ky.; Louisville Medical College, 1898; member of the Kentucky State Medical Association; aged 80; died, August 4, in St. Joseph Hospital, Lexington, of pyloric obstruction, probably carcinomatous.

Ivan King, Chicago; Chicago Medical School, 1928; Université de Genève Faculté de Médecine, Switzerland, 1932; member of the Illinois State Medical Society; aged 44; died, July 30, in the Michael Reese Hospital of pyelonephrosis.

Joseph Arda Hall, Cincinnati; Miami Medical College, Cincinnati, 1897; served during the World War; fellow of the American College of Surgeons; aged 67; died, August 8, at Sugar Hill, N. H., of a ruptured aneurysm of the aorta.

John Cornelius Shoudy Ⓢ Syracuse, N. Y.; Syracuse University College of Medicine, 1890; for many years a member of the staff of the Crouse-Irving Hospital; aged 71; died, August 4, of coronary thrombosis and arteriosclerosis.

Lafayette Van Amburg, Jackson, Miss.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1885; aged 81; died, July 17, in the W. A. Foote Memorial Hospital of auricular fibrillation and arteriosclerosis.

Charles Edward Clingan, Sioux City, Iowa; Rush Medical College, Chicago, 1877; member of the Iowa State Medical Society; aged 89; died, August 8, on a ranch near Sundance, Wyo., of myocarditis and arteriosclerosis.

Samuel F. Haverstock, Detroit; Detroit College of Medicine, 1909; member of the Michigan State Medical Society; on the staff of the Lincoln Hospital; aged 59; died, August 9, as the result of an automobile accident.

Kenneth Parnell Foster * Gloversville, N. Y.; University of Buffalo School of Medicine, 1931; member of the Medical Society of the State of New York; aged 32; died, August 19, of a gunshot wound in the head.

George Henry Hooper * Belmont, Mass.; Tufts College Medical School, Boston, 1919; on the staff of the Cambridge (Mass.) Hospital; aged 49; died, July 24, of duodenal ulcer and mediastinal lymphoblastoma.

Frederick Albert Cook, East Aurora, N. Y.; University of the City of New York Medical Department, 1891; explorer; aged 75; died, August 5, in the New Rochelle (N. Y.) Hospital of cerebral hemorrhage.

William Hugh Carroll, Oak Terrace, Minn.; University of Minnesota Medical School, Minneapolis, 1933; aged 31; died, August 7, in the Eitel Hospital, Minneapolis, of subacute bacterial endocarditis.

Edward E. Carter, Arkadelphia, Ark.; Gate City Medical College, Dallas, Texas, 1905; member of the Arkansas Medical Society; aged 64; died, August 7, of cerebral hemorrhage and diabetes mellitus.

Rudolph Hanover, McKees Rocks, Pa.; Baltimore Medical College, 1906; member of the Medical Society of the State of Pennsylvania; aged 62; died, August 1, in the Montefiore Hospital, Pittsburgh.

Jesse Lane Wickle, Anniston, Ala.; University of Georgia Medical Department, Augusta, 1879; formerly mayor and state senator; aged 85; died, July 25, in a local hospital of chronic myocarditis.

Harlo Adoniram Fiske, Springfield, Mass.; College of Physicians and Surgeons, medical department of Columbia College, New York, 1877; aged 89; died, August 8, of myocarditis.

Marietta C. Catalano-MacLean * Buffalo; University of Buffalo School of Medicine, 1923; aged 42; died, August 3, in the Millard Fillmore Hospital of peritonitis following a cesarean section.

William Roe Foard, Cumberland, Md.; Baltimore Medical College, 1903; aged 58; died, August 4, in the Allegany Hospital of injuries received when he was struck by an automobile.

John Campbell Tilt, St. Joseph, Mo.; St. Louis University School of Medicine, 1903; member of the Missouri State Medical Association; aged 70; died, July 30, of coronary occlusion.

Theodore Dwight Foljambe, Madison, Ohio; Cleveland Medical College, 1891; aged 70; died, July 29, in the Lake County Hospital, Painesville, of empyema of the gallbladder.

Thomas Dudley Merrick, Richmond, Va.; Jefferson Medical College of Philadelphia, 1888; member of the Medical Society of Virginia; aged 77; died, July 28, of paralysis agitans.

George Franklin Way * Lincoln, Maine; Bellevue Hospital Medical College, New York, 1897; formerly county medical examiner; aged 65; died, July 30, of angina pectoris.

J. S. Smith * Radford, Va.; College of Physicians and Surgeons, Baltimore, 1887; aged 78; died, July 23, in the New Altamont Hospital, Christiansburg, of myocarditis.

Reinhard Roerig, Parsons, Kan.; Julius-Maximilians-Universität Medizinische Fakultät, Würzburg, Bavaria, 1896; aged 73; died, July 11, in Independence of a fractured hip.

William Isaac Painter, Tazewell, Va.; Jefferson Medical College of Philadelphia, 1894; member of the Medical Society of Virginia; aged 70; died, July 20, of heart disease.

Merton Elbridge Rideout * Waupaca, Wis.; Northwestern University Medical School, Chicago, 1904; aged 63; died, July 22, of coronary sclerosis and arteriosclerosis.

William L. Wise, Chopin, La.; Memphis (Tenn.) Hospital Medical College, 1903; member of the Louisiana State Medical Society; aged 64; died, July 24, of heart disease.

Thomas Dennis Kelly, Miami, Fla.; Columbia University College of Physicians and Surgeons, New York, 1919; aged 46; was found dead, July 29, of coronary occlusion.

Cornelius M. Dailey, Carnegie, Pa.; Baltimore Medical College, 1905; aged 63; died, August 19, in the Harrisburg (Pa.) Hospital of glomerular chronic nephritis.

Edgar A. Peck, Valparaiso, Ind.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1880; aged 82; died, August 10, of bronchopneumonia.

Frances Wallach Monell, Great Neck, N. Y.; New York Medical College and Hospital for Women, New York, 1889; aged 89; died, July 13, of arteriosclerosis.

Andrew Lyman Paey, Norfolk, Va.; Meharry Medical College of Walden University, Nashville, Tenn., 1905; aged 65; died, July 27, of arthritis deformans.

Walter H. Allen, Alta, Ill.; Barnes Medical College, St. Louis, 1897; aged 79; died, August 16, in St. John's Hospital, St. Louis, of carcinoma of the kidney.

Richard H. Speight Jr., Rocky Mount, N. C.; University of Maryland School of Medicine, Baltimore, 1901; aged 61; died, July 31, of coronary thrombosis.

Park Laurimore Berkshire, Lewisport, Ky.; Barnes Medical College, St. Louis, 1901; aged 65; died, July 28, of cardiorenal disease and hypertension.

Bernard Thomas Colglazier, Kansas City, Mo.; Kansas City College of Medicine and Surgery, Kansas City, 1921; aged 46; died, July 5, of heart disease.

Alvah Henry Jensen * Hutchinson, Minn.; University of Minnesota Medical School, Minneapolis, 1925; aged 44; died, July 8, of coronary thrombosis.

Jacob Edgar Mendelsohn, Akron, Ohio; Maryland Medical College, Baltimore, 1912; aged 55; died, July 23, of coronary disease and diabetes mellitus.

Edward Chase Cook * York Village, Maine; Medical School of Maine, Portland, 1894; aged 70; died, July 9, of cardiovascular renal disease.

Charles Judson Sawyer * Windsor, N. C.; College of Physicians and Surgeons, Baltimore, 1895; aged 72; died, July 28, of coronary thrombosis.

Emily Wright, Springboro, Ohio; Woman's Medical College of Pennsylvania, Philadelphia, 1889; aged 80; died, July 13, of carcinoma of the rectum.

Harry Edward Barco, Blackstone, Va.; Howard University College of Medicine, Washington, D. C., 1911; aged 58; died, July 27, of carcinomatosis.

Albert P. Rocquet, New Orleans; Tulane University of Louisiana School of Medicine, New Orleans, 1889; aged 74; died, July 18, of nephritis.

William Abner Wyatt, Rosie, Ark.; Barnes Medical College, St. Louis, 1899; aged 74; died, July 12, of hypertension and arteriosclerosis.

Jefferson F. Landen, Chinquapin, N. C.; University College of Medicine, Richmond, Va., 1905; aged 78; died, July 16, of coronary occlusion.

Everett A. MacDonald * Beverly Hills, Calif.; Medical College of Ohio, Cincinnati, 1895; aged 69; died, August 3, of coronary occlusion.

John Franklin Kirksey, Mayfield, Ky.; University of Louisville Medical Department, 1897; aged 65; died, July 28, of cerebral hemorrhage.

Jacob Aldrich Wood, Syracuse, N. Y.; Albany (N. Y.) Medical College, 1873; aged 92; died, July 21, in Constantia of lobar pneumonia.

Eugene A. Brown, Brewster, N. Y.; Hahnemann Medical College and Hospital, Chicago, 1878; aged 92; died, July 12, of arteriosclerosis.

William Ross Johnston * Charlottesville, Ind.; Medical College of Ohio, Cincinnati, 1891; aged 73; died, August 8, of heart disease.

Charles Weakley Parker, St. Louis; University Medical College of Kansas City, Mo., 1891; aged 74; died, August 8, of heart disease.

Charles Fremont Hatcher, Ames, Iowa; Drake University Medical Department, Des Moines, 1888; aged 82; died, July 26, of uremia.

John Elliott Payne, Afton, Iowa; College of Physicians and Surgeons, Keokuk, 1896; aged 67; died, July 25, of heart disease.

Bureau of Investigation

SOME FRAUDULENT "CANCER CURES"

Science and scientific medicine continue to advance rapidly, in spite of which fraudulent "cancer cures" seem to go on forever—until some are overtaken by the United States Post Office Department or other federal agencies. In recent months the Post Office has caught up with some of these swindles and debarred them from the mails.

SAURINOL OIL AND SALVE

The Saurinol Distributors Corporation and John H. Olmes, Secretary, at Colorado Springs, Colo., and John H. Olmes at Pueblo, Colo., sold products through the mails under the false representations that when used as directed they would overcome and cure exposed cancer and many other conditions.

The Post Office memorandum brought out that some of the Saurinol advertising bore the claim that "This booklet is not issued to deceive or mislead the public, but as a guide for the user to administer 'Saurinol.'" Apparently unimpressed by this declaration of virtue, the Post Office proceeded with its investigation. From one Adam Griesener, President, and John H. Olmes, Secretary-Treasurer of the concern, the information was obtained that Saurinol Oil was the unrefined product of three wells located in Fremont County, Colo., and that the salve was prepared for the promoters by a chemist in Colorado Springs. A government chemist brought out that his analysis of the liquid Saurinol showed it to be a burning mineral oil containing 0.09 per cent of cinchona alkaloid, with a small amount of asphalt and a trace of ichthyol and the Saurinol Salve to contain 1.6 per cent of camphor and turpentine in a base of petrolatum and beeswax, with traces of paraffin and ichthyol.

Expert medical testimony introduced at the hearing showed that, aside from forming a protective covering for skin lesions both the Saurinol products would act merely as astringents and counterirritants and would be without therapeutic effect in the treatment of any cases of cancer or the other disorders for which they were promoted. The expert testimony also brought out that adequate treatment of any of these conditions must be based on proper diagnosis and remedies suited to the individual patient. Further, it was shown that in cancer the affected tissues must be subjected to microscopic examination prior to treatment by surgery, radium or roentgen ray, in accordance with the needs of the case.

According to the Post Office memorandum, inquiries addressed to the Saurinol concern after the Post Office investigation had begun also resulted in the receipt of replies soliciting remittances in the name of B. H. Rouse, M.D., at Florence, Colo. (Benjamin H. Rouse of Florence, Colo., appears in the American Medical Association's records as a graduate of Loyola University School of Medicine, Chicago, in 1919. He was licensed to practice in Illinois in 1920 and obtained reciprocal licenses in Idaho, Kansas, Nevada and Colorado.) In spite of the fact that Rouse had replied to inquiries sent to the firm, he denied any connection with the sale of the Saurinol nostrums. His letters to the Post Office Department indicated that in addition to Saurinol Oil and Salve he might furnish other treatment. Since the exact character of such treatment had not been ascertained, inclusion of his name in the fraud order was not deemed advisable by the Post Office.

The order was issued Feb. 29, 1940.

It is also worth noting that another government agency had earlier taken action against the concern. In July 1939 the Food and Drug Administration seized in interstate commerce a consignment of Saurinol that had been shipped by the Saurinol Distributors Corporation and charged that false and misleading statements on the label representing it as a relief from exposed cancer, varicose veins, pyorrhea, ulcers, skin diseases and some other disorders were a violation of the Food, Drug and Cosmetic

Act. Government chemists reported that the stuff was essentially medium boiling petroleum oil. As the Saurinol concern put up no defense the shipment was confiscated.

THE GRAFANOL FRAUD

From Durant, Okla., an outfit operating under the titles Grafanol Company and Grafanol Corporation, and run by one W. F. Grafa, sold "Grafanol Ointment" through the mails under the false and fraudulent representations that it was a highly effective remedy and cure for any case of skin cancer and many other disorders, chiefly those of the skin. The concern also sold by mail something called "Maytubby Springs Sour Water," which it fraudulently represented as a highly effective remedy and cure for any case of stomach trouble, kidney trouble, rheumatism or eczema. Names secured in various ways were solicited with circular matter which abounded in testimonials purporting to come from persons who had been "cured" by Grafanol.

A government chemist reported that Grafanol was a black viscous mixture of petrolatum products, water, sand and calcium oxide. The government's medical expert testified that the stuff would not and could not cure any case of cancer or blood poisoning.

The government chemist also analyzed Maytubby Springs Sour Water and testified that it contained 0.156 Gm. per hundred cubic centimeters of sodium sulfate, with traces of chloride, iron and other minerals, not named. The medical expert mentioned also testified regarding this water, stating that it would have no therapeutic action whatever, that its use was merely equivalent to the taking of an equal quantity of ordinary tap water and that it would not or could not overcome or cure stomach trouble, kidney trouble or eczema.

The fraud order was issued May 23, 1940.

An outfit known as R. F. Grafa & Sons, Durant, Okla., which may have been an earlier name for the same concern, was declared by federal authorities in 1932 to have violated the Pure Food and Drugs Act in fraudulently representing on the labels of its Grafanol Ointment that this was a remedy for skin cancer and many other disorders. The case was described in Notice of Judgment 19029, issued in July 1932.

SUSSMAN'S DIETARY "CANCER CURE"

"Buy my book and cure your cancer" might well have been the advertising slogan of one Ben Sussman of New York, who, operating as the Lujen Publishing Co., put out a volume "My Fight Against Cancer." The claims it contained were so obviously fakish that the Post Office Department declared its sale to be a scheme for obtaining money by means of false and fraudulent pretenses, representations and promises and debarred it from the mails.

According to the Post Office memorandum on this case, Sussman had been successively a life insurance agent, a real estate salesman and, from 1907 to 1922, the operator of a woman's apparel store. In the latter year, it appears, he retired from active business because of an illness which was described in some detail in his book. The first mention it made of cancer was as follows:

In 1927 and 1928, I was treated by an eminent skin specialist for a cancerous growth on the back of my neck and cysts back of my ears. This treatment consisted of X-Ray and Radium and I was considered cured. A few years later, some of the old trouble came out on my back and under my arm pit.

In the meantime, a sister-in-law of mine passed away of cancer, and my wife had been sick for a number of years with tumor and cancer. We went to Saratoga every year for treatment. We had used the best doctors, but to no avail. . . .

Sussman reluctantly divulged the name of the specialist mentioned. When this physician was asked by the government for the facts, he replied that he had treated the man between October 1926 and March 1930 for a pedunculated keloidal growth on his neck and various other conditions, but nothing of a malignant nature, nor was there any cancerous or other serious condition involved.

A few years after the foregoing treatment, according to Sussman, "some of the old trouble came out on my back and my arm pit." He later referred to this "old trouble" as being warts, wens, pimples or cysts, any of which, he asserted, was in his view the same as cancer or cancerous growth! His book relates his quest for a cure:

... I went again to Saratoga, took the baths and treatments, and again come in contact with some of the greatest men from all parts of the world and also with some of the best doctors. They . . . advised me that if I could acquire the knowledge of nutrition and food chemistry of the different elements and ingredients that certain foods contain in their natural state, I would be able to correct many of the ill results which abuse of my body had caused to develop, (over a long period of years). Since that time I have been searching far and wide and reading all kinds of books on cancer. I also attended numerous lectures and health classes conducted by doctors. I discovered that the real cure depended upon myself, providing I had the will power and backbone to do away with the old habits of living, and had the knowledge of how to live today, forget the past, and think only of the present.

After every so-called treatment, for the last 20 years, had failed me, I gave myself completely over to science and Mother Nature. With this aim in mind, I made many different experiments upon myself in the past six years, and watched the reactions to the ways of living which I had adopted for myself. Today, thank God for the wisdom and understanding of body chemistry, as I near my sixtieth birthday on December 23rd next, I feel better and look better than I did 20 years ago.

Thus, says Sussman's book, he cured himself by his vegetable and fruit diet of

all sorts of toxins, tumors and cancerous growths that had developed in me. Actually they were blocking the intestinal tract for the past 20 or 25 years. . . . I was able to dissolve all the impurities contained in my body for a number of years, from the combination of natural chemical elements of vegetables, such as carrots, pure grape fruit juice, garlic, celery, limes or lemons, watercress, parsley, cabbage, onions, spinach, beets, escarole, orange juice, seedless grapes, and black mission figs, soaked over night.

I used carrot juice with certified milk and a little evaporated milk, according to taste, about a quart a day, and I found this to be the most alkaline food for one suffering from tumors or cancer. Within a few weeks I realized that the pains in my stomach and in my entire body were gradually disappearing.

Because some statements made by Sussman at the government hearing contradicted some of his others as to the periods when he suffered from the declared disorders, his testimony was found to be so irrational as to deserve little if any credence. For that reason the acting solicitor for the Post Office Department who handled this case was convinced that Sussman had never had cancer. When Sussman was questioned about the various items in the diet that he claimed had "cured" him, he was unable to give intelligent answers. Further, although he claimed he had read "all kinds of books on cancer," he could not definitely identify even one such book, nor could he explain how "clogging" of the intestines could supposedly cause cancer. Also he was unable to explain why he drew a distinction between what he called cancer and cancerous growth, or the difference between a benign and a malignant tumor, or between a tumor and a cancer. Finally he admitted that all these terms meant the same to him. Typical of his erratic testimony was his assertion that although he regarded cancer as first in the order of maladies causing fatalities in this country he did not consider it a "serious disease." Although he claimed to base his "cure" on combinations of vegetables and fruits, he was unable to name even the primary constituents of foods: carbohydrates, fats, proteins, vitamins and minerals.

Expert medical testimony introduced at the hearing showed, according to the Post Office Department, that if persons having cancer undertook the treatment Sussman recommended, the result would be early and in many cases unnecessary death of such persons. The expert testimony also brought out that the only method by which a suspected cancer can be positively diagnosed as such is by means of a microscopic examination of the tissue surgically excised from the growth—a fact utterly unknown to Sussman—and that only scientific treatment can eradicate the cancer.

As Sussman conducted his swindle under the title of the Lujen Publishing Co., the fraud order issued March 7, 1940, unfortunately covered only this name and not that of Sussman as an individual.

Correspondence

ERROR IN WORK ON INFANTILE PARALYSIS

To the Editor:—My attention has recently been called to the fact that in volume A 40 of the International Bulletin dealing with Infantile Paralysis, published and distributed in the United States by the National Foundation for Infantile Paralysis, Inc., there is a statement on page 75 in French and on page 79 in English that is exceedingly ambiguous. This reads "Thus, he was led to the conclusion that 0.10G. of potassium chlorate, per kilo of body weight, given in syrup of raspberry, every two hours, during the daytime and at night, proved to be the optimal dosage."

This is not to be interpreted to mean that 0.10 Gm. of potassium chlorate is to be administered every two hours. This would be far in excess of the maximum tolerated dosage. This statement should be interpreted as being a total of 0.10 Gm. of potassium chlorate given, if at all, in twelve divided doses over a period of twenty-four hours.

DON W. GUDAKUNST, M.D., New York.
Medical Director, the National Foundation
for Infantile Paralysis, Inc.

TREATMENT OF DIABETES

To the Editor:—It was with dismay that we read in THE JOURNAL, August 10, statements of Dr. Edward Tolstoi at a conference of "the members of the Departments of Pharmacology and of Medicine of Cornell University Medical College and the New York Hospital, with the collaboration of other departments" regarding the treatment of diabetes. He said:

We found that our experimental subjects were free from the symptoms of diabetes in spite of glycosuria when they were receiving a diet of 75 Gm. of protein, 60 Gm. of fat and 200 Gm. of carbohydrate, and protamine zinc insulin in daily doses of 50 units. Two rather unusual patients whom we observed in the metabolism ward for periods of fifty to sixty days maintained their weight. I want to emphasize this point. They also had no thirst or polyuria; they had no ketonuria, and they were in nitrogenous equilibrium in spite of the fact that they excreted as much as 150 Gm. of sugar some days, and in spite of the fact that there was an ever present postprandial hyperglycemia. From such experiments we postulated that for patients treated with protamine zinc insulin the guiding features of satisfactory treatment should be (1) the maintenance of weight, (2) freedom from symptoms and (3) absence of ketonuria. Furthermore, we were not concerned about the hyperglycemia or the amount of dextrose excreted.

Does it make common sense to say that an adult of average body build and activity receiving 1,640 calories, daily in the form of carbohydrate 200, protein 75 and fat 60 Gm. who is excreting 150 or even 100 Gm. of sugar in twenty-four hours, thus leaving a net balance of 1,040 or 1,240 calories respectively, could maintain body weight and be in nitrogenous equilibrium for a prolonged period? Furthermore, is it sensible or economical to allow the wastage of so large a part of the food eaten?

According to Dr. Tolstoi, the patients were free from thirst and polyuria in spite of marked glycosuria. Let it be assumed, then, that the quantity of urine was normal and therefore approximately 1,500 cc. daily. If the patient voids 150 Gm. of sugar the proportion of sugar in that day's urine would be 10 per cent. Does it seem at all likely that the average diabetic patient will be symptomless while continuously excreting 10 per cent, or even 5 per cent, of sugar?

Progress in diabetes during the last fifty years has been by painstaking research. Certain bizarre methods of treatment have been introduced, but no successful method has totally disregarded facts. Each new method promulgated by responsible

physicians has been supported by data which, even though they might not convert others to the new idea, at least commanded respect. No matter whether the diet is high or low in carbohydrate, protein or fat or in total calories, the outstanding clinicians in this and other countries have sought to control the disease and in so doing have borne in mind the Naunyn dictum that the patient with severe diabetes, if carefully treated, is apt to do surprisingly well but the patient with mild diabetes, if neglected, does poorly.

Like many others, we believe in controlling the hyperglycemia of diabetes (1) because it is fundamentally an abnormal state, (2) because a high blood sugar is a constant stimulus for insulin secretion and allows no opportunity for rest and recuperation such as the pancreas of a healthy person enjoys between meals and at night and (3) because control of hyperglycemia and glycosuria proves utilization of the diet whereas their disregard leads, in our experience, to accessory annoyances such as polydipsia and polyuria, the attendant necessity for extra food to make up for the loss of calories in the urine and the obvious wear and tear on the system for ingestion, assimilation and excretion of this unutilized extra food, quite apart from needless cost and waste. A high percentage of sugar in the blood implies the same in the tissues; we think it likely that, directly or indirectly, this conduces to lack of normal tissue repair and resistance to infection, predisposes to degenerative phenomena in arteries and nerves and leads to weakness, weariness and impotence, although we freely admit that positive proof is lacking that all these harmful effects are due to hyperglycemia per se. Unhesitatingly we maintain that the blood sugar should approach normal because it is an index of the control of the diabetic condition; if normal, it is one assurance that the whole disease is being treated well. Hyperglycemia is the red light which the physician should no more disregard, although he cannot always explain its significance, than he should fail to heed the red signal at the railroad crossing because he cannot see the train around the corner.

Dr. Tolstoi's advice for certain cases of diabetic acidosis follows:

First, let us consider the one whose condition is not far advanced, the patient as we see him in the clinic. He may report a sore throat. Examination of the urine reveals a 4 plus acetone reaction and diacetic acid. The skin and the tongue are dry, acrae is dehydration and there are listlessness and the desire to be left alone. We tell the patient "Go home, take a tablet or two of table salt (1 Gm. of salt) every hour, and follow that with a glass of water; in addition, take all the hot salt broth you can." We teach him to examine his urine for acetone and tell him to do so every two hours, and as long as acetone is present to give himself insulin (regular soluble) after each urine examination until the acetone bodies disappear. The dosage of insulin is determined by the urine analyses for sugar. He is told to take 25 units if the result of the test is yellow or red, 15 units if the specimen is green, and the juice of an orange if the Benedict solution is unchanged after boiling. This simple rule also protects the patients against insulin overdosage.

We condemn such advice. In our opinion it is dangerous to send home patients whose urine gives a 4 plus reaction for acetone and diacetic acid. Dr. Tolstoi does not even suggest that they keep under the supervision of their family physicians. If there is one thing we attempt to do as a result of our experience with patients in coma and near coma, with diabetic children and with diabetic patients in general, it is this—to train them, if any unusual symptoms occur, to call the doctor. A patient who exhibits "listlessness and the desire to be alone" is not likely to carry out intelligent, energetic self treatment.

We believe in the orthodox treatment of diabetes. We are convinced that our patients and the patients of other physicians do the best who follow the rules. Differences in diets of from 50 to 75 Gm. of carbohydrate a day are immaterial. By no means can we keep all our patients sugar free, but we do strive to maintain them under as good control as possible,

thereby, as we believe, protecting them from complications and progression of the disease. Furthermore, as will appear in the forthcoming (October) (seventh) edition of the "Treatment of Diabetes Mellitus," we have endeavored to support our convictions by recording the complications, the causes of death and the duration of life in 5,669 of our fatal cases between 1898 and 1940. Tables show the decrease of deaths due to coma from 64 per cent to 4 per cent, the steady increase in duration of life after onset from 4.9 to 12.5 years and the advance in the average age at death from 44.5 to 64.8 years.

ELLIOTT P. JOSLIN, M.D.

HOWARD F. ROOT, M.D.

PRISCILLA WHITE, M.D.

ALEXANDER MARBLE, M.D.

Boston.

"METABOLISM OF IRON"

To the Editor:—In an editorial in THE JOURNAL, July 27, various claims were made for a method of following iron metabolism, making use of radioactive iron. The editorial writer appears to have overlooked a communication published in the November 1939 issue of *Physical Review* (Barnett, Abraham: The Use of Radioactive Forms of the Common Elements in Physiology, *Physical Rev.* 56:963, 1939) casting serious doubts on the validity of conclusions drawn as to the behavior of nonradioactive metals from experiments carried out in which radioactive forms of the same elements are used. Briefly, taking the red cell as an example, it was pointed out that, since it is known that its limiting membrane is composed of an electrically charged polar lipoidal substance having a thickness estimated to be of the order of one molecule, the bombardment of the cell wall at close range by electrically charged particles emanating from the radioactive ion might alter the polar properties of the wall and so modify its permeability. Moreover, the proteins in contact with the cell wall are known to be denatured by beta rays such as are given off by radioactive iron, and denaturation of intracellular proteins might grossly alter the behavior of the thin surface membrane.

It would appear that there is an urgent need for determining whether or not radioactive ions are capable of altering the permeability of cell membranes; otherwise the large amount of work now being published on the use of radioactive "tracers" may prove grossly misleading. Unfortunately, access to radioactive forms of the common elements is limited and the costly equipment necessary for studying them not always available. It is suggested that an answer to the various questions raised here might be found by the following simple experiments:

1. The electrophoretic migration speeds of red cells suspended in isotonic nonradioactive and radioactive sodium chloride or Ringer's solution containing these ions could be compared. A difference in speed would argue in favor of a modification of the charge on the red cell by the radioactive sodium.

2. The impedance of the two solutions in the low alternating current frequency range (10,000 down to about 10 cycles per second) could be compared. A difference in either the reactive or resistive components would argue in favor of modification of the membrane (Fricke, H., and Curtis, H. J.: The Electric Impedance of Hemolyzed Suspensions of Mammalian Erythrocytes, *J. Gen. Physiol.* 18:821 [July] 1935. Cole, K. S., and Curtis, H. J.: Electrical Impedance of Nitella During Activity, *ibid.* 22:37 [Sept. 20] 1938). Since changes in permeability of the red cell membranes are reflected best by measurements at low frequencies (Fricke and Curtis), a simple comparison of impedances at 60 cycles might suffice.

ABRAHAM BARNETT, M.D., New York.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES NOT SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

HIGH PROTEIN DIET—OBESITY

To the Editor:—With regard to the question of meat in the diet, has any one cited absolute proof that "eating meat twice a day is harmful, increases blood pressure in a normal person, or decreases length of life by some way or other, usually believed to be by hurting the kidneys"? May I have an opinion on this? An argument arose because of a 23 year old man, some 20 pounds overweight, who is attempting to diet and eats meat twice a day. It is stated that he can't do much reducing because 50 per cent of his protein intake is converted to dextrose. Incidentally, the suggestion that he take magnesium sulfate twice a week to aid him brought the objection that it might derange his now perfectly normal morning habitual stool. Can you answer this? The suggestion that I watch his pulse, blood pressure and heart and give 2 grains of thyroid a day was voted down by his wife. I feel that my knowledge of his condition does not necessitate taking a basal metabolic rate and that thyroid in the amount suggested and continuance under my care could not be harmful. (The patient's parents both have low basal metabolic rates and are taking thyroid substance.) A check-up twice a week would forestall any impending harmful effects. (Of course 2 grains of thyroid a day is just to increase his metabolic rate and is not his tolerance dose.)

M.D., Ohio.

ANSWER.—There is no real evidence that the amount of protein which could be consumed by the average person using ordinary foodstuffs (even if he ate meat twice a day) would "increase the blood pressure, harm the kidneys or decrease longevity in any other way." Such evidence as does suggest a possible harmful effect is based on the use of artificial diets containing dried animal proteins, in rats. These observations are based on extreme experimental conditions and highly refined criteria for judging the results. Their application to man and their clinical significance, even if applicable, are doubtful. On the other hand, there are experimental observations on men who lived on an exclusively meat diet for a year without any detectable ill effects. In this connection it must be remembered that meats contain large amounts of fat, and that even an exclusive meat diet need not contain as large a proportion of animal proteins as can be incorporated in an artificial diet by the use of dried proteins. A review and bibliography of this subject was published by Bischoff in the *Journal of Nutrition* 5:431 [July] 1932.

The fact that a certain proportion of ingested protein is converted to dextrose has no bearing on the matter of weight reduction. Unless the sugar so formed is lost to the body (as may occur by excretion in the urine of a patient with uncontrolled diabetes) the ultimate caloric value of the ingested protein is independent of the intermediary metabolic processes which it may undergo. Whether an individual gains or loses weight, therefore, depends strictly on the balance between the total calories ingested in the form of any and all foodstuffs and the total calories expended during the same period, chiefly in the form of muscular work and heat.

The crucial importance of the balance between calories taken in and calories expended also determines the answers to the questions regarding the use of magnesium sulfate and thyroid. Each of these substances might cause some temporary loss of weight, provided the patient did not increase his food intake correspondingly. But the use of magnesium sulfate is not justifiable because (1) it produces its chief effect by dehydration, and the apparent weight loss can be restored by drinking a few glasses of water; (2) if used to excess it can interfere with food absorption, it may cause an enteritis, and will probably interfere with the regular stool habit; (3) it cannot be continued indefinitely as a treatment. The use of thyroid, except in instances of definite clinical hypothyroidism which apparently the case in question is not, is not to be commended because (1) it does involve possible harmful effects and (2) it cannot be continued indefinitely. It is the last reason in each case which is the most important objection to the use of these substances in the treatment of obesity. If weight reduction is accomplished by any temporary expedient without affecting the amount of food which the patient habitually consumes, it is obvious that he will gain back all the weight he has lost as soon as the treatment is suspended. The only real and permanent treatment for obesity when a patient is otherwise normal is the substitution of a new and better food habit for the old habit of overeating.

FLOOR FURNACE IN OPERATING ROOM

To the Editor:—A small addition to my hospital includes in the operating room (10½ by 12½ feet) a floor furnace built by the Coleman Lamp and Stove Company having an input of 20,000 British thermal units and an output of 14,000. We have a thermostat to control it and keep it at any desired temperature. Is it necessary to turn the furnace off while operating? Would it be safe if the pilot light alone was kept burning? My object in asking these questions is that my anesthetist requested that the furnace be turned off and the pilot light be extinguished before starting the anesthetic (ether). I understood before installing the furnace that it was safe for the purpose. Please advise me.

J. Guild Wood, M.D., Weatherford, Okla.

ANSWER.—It is well known that ether vapor is a little over two and one-half times as heavy as air. This means that ether vapor during anesthesia will flow from the point of administration to the floor and will then follow the drift of floor currents. It is understood that cold air from the floor is sucked to the outer jacket of the Coleman heater, where it comes in contact with the stove, and when warmed will form a shaft of hot air in the center of the steel register. Thus, the direction of circulation is from the floor with its high concentration of ether vapor to the hot stove. Exactly what mixture of ether and air will prevail will vary from minute to minute depending on the amount of administration and the technic used (opened or closed). Limits of flammability of ether-air mixtures range from 1.85 to 36.5 per cent by volume. Thus, with such a wide range, ether-air mixtures must be considered flammable.

The next point of interest is the minimum ignition temperature of ether-air mixtures. The United States Bureau of Mines states that this temperature is 304 C. Thus if the inner core of the heating system approaches or exceeds this temperature, it would cause ignition of the ether-air mixture which would necessarily come in contact with it.

An additional interesting fact is that the volume of air rendered explosive by 1 pound of ether at 60 F. and under one atmosphere of pressure is 277 cubic feet.

So far, only normal satisfactory working conditions for the Coleman stove have been considered. But the possibility of leaks in the stove and circulating mechanism or of possible back-fire must not be overlooked. Under such conditions, an open spark might easily explode an ether-air mixture.

It is therefore believed on purely theoretical grounds that the suggested use of the Coleman heater in an operating room where ether is the anesthetic agent is not without danger.

All figures cited are from the Explosion Division, Pittsburgh Station, U. S. Bureau of Mines (Jones, G. W., chemist: The Explosion and Fire Hazard of Combustible Anesthetics).

INTRAVENOUS ALCOHOL FOR ALCOHOLIC ADDICTS

To the Editor:—I would appreciate any information available about the injection of alcohol for the treatment of alcohol addicts. An article came out in the *Magazine Digest* of December 1939 condensed from an article in *Je sais tout*, Paris, by Joseph Andrieu, in which it is said "It is common to inject 40 cc. of alcohol (20 cc. in the morning and 20 cc. at night) which is ordinarily bought at the pharmacists." After two days' treatment the patient is supposed to be considerably improved and after five days he is cured.

R. W. Mann, M.D., Toronto, Ont.

ANSWER.—In the September 1939 issue of *Je sais tout*, a popular French magazine, is an article by Joseph Andrieu, D.Sc., concerning the treatment of chronic alcoholism. Andrieu gives Dr. Bruel credit for the theory that the morbid symptoms in chronic alcoholic addicts are due to withdrawal of alcohol and that a steady supply of alcohol tends to keep these persons apparently normal (Bruel, L.: Campaign Against Chronic Alcoholism: Intravenous Injections of 30 Proof Alcohol, *Echo méd. du nord* 10:497 [Aug. 31] 1939. Santa Cruz Salazar, Edilberto: Intravenous Alcohol, *Cròn. méd.* 55:17 [Jan.] 1938). Bruel's treatment consists in the intravenous injection of 15 per cent alcohol by weight (30 degrés—probably about 30 proof), 50 cc. the first day and decreasing to 20 cc. on the fifth. "No pain or after effects are noted." Four out of five are said to be cured. It is true that alcohol may eventually cause changes in the nervous system which are manifested by extreme unrest; more alcohol is then taken because the narcotic action of alcohol counteracts the nervousness, and so a vicious cycle is established. There is no doubt that a person who is at the verge of delirium tremens is temporarily benefited by alcohol, regardless of the method of administration. As the value of giving alcohol to alcoholic addicts is to prevent sudden withdrawal with subsequent onset of delirium tremens (a state in which much damage is often done to the patient) if the patient cannot consume alcohol by mouth, it would seem rational to give it intravenously, gradually decreasing the dose each time, similar to the way in which withdrawal of alcohol by mouth is accomplished. Until more concrete evidence is available, it is advisable not to become too enthusiastic over Bruel's treatment.

BELL'S PALSY AND SYPHILIS

To the Editor:—A man aged 38 has a left sided Bell's palsy of three weeks' duration which was found to be of syphilitic origin; both the Kahn and the Wassermann reaction have been positive on two different occasions. He has also had severe pressure pains just posterior to the left ear. I have been giving him antisyphilitic treatment consisting of bismuth subcitrate and potassium iodide. Is this the proper routine to follow? What type of syphilis could this be without any history of a primary or secondary lesion? A spinal fluid examination has been flatly refused by the patient. When, if ever, is electrical stimulation necessary? Is massage of definite value in such cases? What is the usual rate of improvement in these cases and what is the prognosis?

M.D., Illinois.

ANSWER.—This man evidently is syphilitic but in the absence of a spinal fluid examination it cannot be taken for granted that the facial paralysis is due to syphilis. Facial paralysis of the ordinary peripheral type, so-called Bell's palsy, is common both in healthy people and in people who have some other disease. If any other cranial nerve is affected or if there are any cerebral symptoms, one would assume that syphilis is the cause. To make a prognosis and decide on the mode of treatment it is well to test the facial nerve and the muscles supplied by it with the faradic current. If there is normal response the prognosis is good for recovery within a few weeks, with or without treatment of any kind. If the response is lost it is well to give the muscles treatment every day or two with the galvanic current by means of an interruptor handle. Faradic treatment is, of course, useless. Massage of the face muscles is of some use in lessening the amount of atrophy by improving the circulation in the muscles. The treatment used for the syphilis may suffice if there is no involvement of the nervous system but the patient ought to be told about the serious risk he runs by not submitting to spinal puncture at this time when any eventual involvement of the nervous system might still be checked. If he persists in refusing spinal puncture it would be advisable to treat for syphilis in addition to the other remedies. If spinal puncture is made and the fluid gives a positive reaction, tryparsamide would probably be the drug of choice.

EOSINOPHILIA WITH GASTROINTESTINAL SYMPTOMS

To the Editor:—A married woman 36 years old has an irrelevant family history. Her own past history is essentially noncontributory except for her first pregnancy, the child being stillborn at 7 months. She subsequently had two normal labors. Her chief complaint, ten weeks ago, was pain across the upper abdomen, arising in the epigastrium and radiating to the right and left hypochondrium. The character was described as mainly colicky but at times sharp. The pain was neither relieved nor aggravated by food. About one hour after the onset of the pain the patient begins to vomit repeatedly. This also does not relieve her. An attack may come on at any time of day. After several days of pain and vomiting she will be free of symptoms for a few days and then another attack begins. When the pain is severe she feels like moving her bowels, but after one or two rather loose motions her efforts are futile. Her appetite is good but she has been losing weight steadily (32 pounds [14.5 Kg.] in the last six weeks) presumably due in part to her vomiting and fear of eating. There has been no melena or hematemesis, no jaundice or "indigestion." She avoids fatty foods somewhat. At times she complains of a feeling of "clogging up" in her neck, relieved by vomiting. This has been present for three months. Otherwise the history is irrelevant except that three years ago she had one of these attacks for a short time. Physical examination on three separate occasions showed generalized tenderness over the gallbladder region. Rectal examination was too painful to permit of any significant evidence being obtained. Vaginal examination revealed acute tenderness in the right fornix and slight tenderness in the left fornix. No masses were felt and the uterus presented no abnormality. The urine was normal on a number of occasions. The Wassermann test was negative. The red cell count was 4,800,000 and hemoglobin 86 per cent Sahli. The white count was 7,950 with polymorphonuclears 47 per cent, lymphocytes 27 per cent and eosinophils 26 per cent. This count has been confirmed in two different hospitals. Repeated examination of the stools for ova or parasites has been negative. Biopsy of a portion of the deltoid for cysts was also negative. Culture of the stools has been negative except for more or less fungus growth which seems to be either a monilia or a streptothrix. Gastrointestinal x-ray studies show considerable gastric retention after eight hours with no evidence whatever of ulcer or abnormality. There seems to be a severe ileitis. The temperature has been more or less normal throughout. X-ray examination of the chest is also negative. There are no complaints or observations referable to the other systems.

M.D., Vermont.

ANSWER.—It is most difficult to explain the eosinophilia in this case. The normal total white count with more than 2,000 eosinophils per cubic millimeter rather restricts the probabilities, but none of the probabilities suggested fit well into the clinical picture. In nearly every instance in which the white count is within normal limits and at the same time the total eosinophil count exceeds 2,000 (2,067 in the present case) the cause is likely to be trichinosis, arsenic poisoning, eosinophilic leukemia, dermatitis herpetiformis, periarteritis nodosa, Hodgkin's disease or lymphosarcoma. Only the first two are common causes.

The gastrointestinal symptoms, without positive observations, point to a functional origin. The gastric retention seems to

indicate pylorospasm. It seems likely that the "ileitis" may be bowel spasm. It would seem wise to investigate the function of the gallbladder, although the presence of gallbladder disease would not be likely to produce such a violent clinical picture.

If the diagnosis of functional gastrointestinal disorder is permitted, one must decide whether the underlying factors are psychic or allergic. An allergic cause would offer some explanation for the eosinophilia. Other well known allergic responses such as bronchial asthma and urticaria are associated with eosinophilia but rarely to such a degree.

In this case, then, the causes of eosinophilia should be carefully reviewed. The problem of trichinosis seems to have been adequately dealt with. Possible allergens, particularly drugs or foods, should be sought for to explain both the eosinophilia and the gastrointestinal symptoms.

EXPRESSION OF HUMAN BLOOD CONSTITUENTS

To the Editor:—In the last few years certain chemical substances, notably the serum chlorides and serum sodium as well as others, have been expressed in milliequivalents per liter rather than in milligrams per hundred cubic centimeters, which is the usual standard of measurement. This is rather confusing to clinicians, even those who have left medical schools recently. Could you please give me the normal ranges of the common chemicals such as sodium, potassium, chlorides and carbon dioxide expressed in milliequivalents per liter? Will you also kindly explain the reason for using milliequivalents rather than milligrams per hundred cubic centimeters in such cases?

M.D., New Jersey.

ANSWER.—The normal ranges of certain human blood constituents are as follows:

	Mg. per 100 Cc. in Serum	Milliequivalents per Liter of Serum	Millimols per Liter of Serum
Sodium.....	320-350	130-152	130-152
Potassium.....	16-22	4.1-5.6	4.1-5.6
Chloride.....	350-390	99-110	99-110
Calcium.....	9-11	4.6-5.5	2.35-2.75
Magnesium.....	2-3	1.0-2.5	0.8-1.25
Carbon dioxide, volumes %.....	50-60	44-52	22-26

The millimols per liter are calculated by dividing the milligrams per liter by the atomic weight of the element. The milliequivalents are the same as the millimols per liter in all cases in which the valence is 1, but if it is 2, as in the bivalent elements or radicals, the milliequivalents would, of course, be twice the millimol values. In the case of carbon dioxide the results are usually expressed as percentage by volume of carbon dioxide gas. In other words, 50 volumes per cent means that 1 liter of serum yields 500 cc. of carbon dioxide gas. Now 1 gram molecule of any gas under standard conditions is 22.4 liters, or 1 millimol is $\frac{1}{22.4}$ of that, or 22.4 cc. Hence 500 cc. of carbon dioxide would represent $\frac{500}{22.4}$, or 22 millimols. However, since carbon dioxide represents a bivalent acid, the milliequivalent value would be twice that, or 44 millimols. The advantage of the milliequivalent system is that calculation can be made easily in terms of one ion substituted for another or balancing another. Thus, 1 milliequivalent of any ion is always equivalent to any other milliequivalent of any other element or radical in balancing negative and positive ions or in substitution.

LESIONS OF TULAREMIA IN RABBITS

To the Editor:—Is it possible for one to tell on gross examination whether a rabbit has tularemia? Specifically, could a vender of meats tell by inspection of the dressed rabbit? Would the liver show any gross evidence? Or any other organ or part of the rabbit? Are domestic rabbits likely to have the disease or does it occur solely in wild rabbits?

M.D., California.

ANSWER.—Although ordinarily it is possible to tell on gross examination of the spleen or liver whether a rabbit has tularemia, in some instances the characteristic whitish pin head to match head size tubercle-like foci of necrosis may be so small as to be barely visible with the use of a hand lens; in rare instances such lesions may be completely invisible grossly. It would not be possible for a vender of meats to determine the presence or absence of tularemia by inspection of dressed rabbits, since there are no distinctive lesions in the muscles, fat or bones. *Pasteurella tularensis* (*Bacterium tularensis*) is, however, distributed throughout the muscle of infected animals and will survive several months of exposure to subfreezing temperatures. The typical lesions are to be found in the spleen, liver and lymph nodes. The disease does not occur in nature in domesticated rabbits; such rabbits are, however, susceptible to experimental production of the disease.

PNEUMONIA AND BRONCHIECTASIS—HAND DISABILITY FROM OLD BULLET WOUND

To the Editor:—A man aged 46, a veteran of the last war, presented himself for examination because of severe recurring bronchitis. He states that in 1916, after serving for two years, he developed bilateral pleurisy and pneumonia. Following recovery from this he found that every spring and fall he has attacks of bronchitis with expectoration of green sputum. Lately the condition has become more severe, and during any spell of damp weather he is subject to this distressing condition. In such a case could one assume that the pneumonia and pleurisy in 1916 have any bearing on the recurrent bronchitis? Prior to 1916 his physical condition was excellent. Secondly, in your opinion would such a person merit a pension? Furthermore, a bullet passed through the left forearm of the patient in 1918, since which date there have been attacks of intermittent swelling of the back of the left hand with numbness and stiffness of the little and ring fingers. Sensation is good throughout but muscle power is impaired. Can anything be done about this? The man is a farmer and because of these two conditions he is partially incapacitated.

Nathan Schechter, M.D., Ottawa, Ont.

ANSWER.—It is extremely difficult at this date to show a direct causal relationship between the bronchitis of today and the pneumonia of 1916 and it would seem equally difficult to prove that such a relationship did not exist. From the history it may be assumed that the patient has a bronchiectasis. Such a complication is not uncommon following influenzal pneumonia. Bronchiectasis is rare following pneumococcal pneumonia but it does occur. It is possible that an x-ray examination of the chest might be helpful but it is doubtful that even this will settle the question of causal relationship.

The only opinion of any value on the pension question is the opinion of the board that administers pension matters.

There can be no question of the service connection of the hand disability. Any improvement in this condition would be dependent on the present cause of disability. Is it a nerve injury or muscle injury? Is there mechanical circulatory obstruction due to contraction of scar tissue? When these points are determined, the advisability of a surgical attempt to correct the disability may also be determined.

IMMUNITY IN DIPHTHERIA

To the Editor:—May I have your opinion on the following statements: 1. "The immunity conferred by one attack of diphtheria is not of long duration, amounting probably to a few weeks or months only" (from Holt and Howland: Diseases of Infancy and Childhood, ed. 9, p. 851). 2. Toxin-antitoxin inoculations have been used in those found susceptible by the Schick test. Three injections are given at weekly intervals. The immunity may last for two years (from Osler and McCrae: The Principles and Practice of Medicine, ed. 9).

M.D., Arizona.

ANSWER.—1. In a large contagious disease hospital where approximately 20,000 cases of diphtheria have been treated over a period of years, second attacks of the disease have been witnessed hardly more than half a dozen times. Ordinarily it may be assumed that one attack of diphtheria does confer an immunity which is usually permanent.

2. Immunity established by the injection of three doses of toxin-antitoxin at weekly intervals is generally protective for a period of at least two years. At present three doses of plain toxoid or two doses of alum precipitated toxoid administered at intervals of from three to four weeks are preferred to toxin-antitoxin.

PLEURAL EFFUSION

To the Editor:—A pleural effusion (left side) following the course of high voltage roentgen treatment of a huge uterine fibroma developed the second week of irradiation. The following interpretations are possible: (1) a malignant growth with pleural or pulmonary metastases; (2) excessive irradiation; (3) an independent condition or disease, *sui generis*. Could you furnish information relative to the frequency of an afebrile pleural effusion encountered in the course of x-ray irradiation of the abdomen? Can carcinoma of the peritoneum or a sarcomatous degeneration of a uterine fibromyoma produce pleural effusion as the first manifestation of a generalized process?

M.D., New York.

ANSWER.—The pleural effusion is probably secondary to pleural or pulmonary metastases from a uterine sarcoma. Although there are references in the literature to pleural effusion secondary to roentgen treatment of the chest, this condition is extremely rare. Cases in which it is suspected nearly always prove to be caused by malignant growth. That an x-ray pleurisy should follow an irradiation of the abdomen is even more unlikely. The great majority of afebrile pleural effusions are cancerous in nature. Of course, there is a possibility that the pleural effusion is an independent disease in no way associated with the uterine enlargement. One can best answer this part of the query by quoting Richard Cabot, who always emphasized the fact that one disease was enough for a person to have at one time and that in the great majority of instances a single diagnosis would cover all signs and symptoms.

Additional information as to the actual nature of the effusion might be obtained by examining the pleural fluid for cancer cells, by injecting some into a guinea pig, and by removing the pleural fluid and then taking a roentgenogram of the lungs. This latter might reveal shadows suggesting either tuberculosis or a malignant condition. The absence of shadows does not rule out either disease.

TYPHOID IMMUNITY IN INFANT AND NURSING

To the Editor:—A patient developed typhoid between the third and fourth months of pregnancy. Subsequent to the delivery of an apparently healthy boy she was found to be a typhoid carrier. 1. Can the child have developed an immunity and, if not, at what age should typhoid immunization be started? 2. Is it safe to allow the baby to nurse?

D. M. Barringer, M.D., Lincoln, Ill.

ANSWER.—1. The child may have developed an immunity. Evidence for or against this fact might be obtained by actual tests of the child's antibody reactions as demonstrated by the ordinary Widal reaction. Another test using skin sensitivity has been suggested but is not in general clinical use. In this test local hypersusceptibility to typhoid bacillus protein is regarded as presumptive evidence of typhoid immunity.

2. If proper care of the nipples and ordinary cleanliness are employed, the child may be allowed to nurse. It is quite possible that the mother may cease being a carrier after a limited period. While about one third of recovered individuals are carriers for as long as three months, only 4 to 11 per cent, it is estimated, eliminate the bacilli indefinitely (more than three months) and so become classed as chronic carriers.

CONGENITAL HEMOLYTIC ANEMIA

To the Editor:—A primipara aged 28 who was given no antepartum care was delivered of a male baby by low forceps. An acute episode of congenital hemolytic anemia (jaundice) then developed. She had an enlarged spleen, severe microcytic normochromic anemia, a high blood cell count and a continuous fever. In spite of daily pint blood transfusions after the fifth day, and later continuous blood transfusion, she died at the end of the tenth day. Twenty years previously she had had an attack similar to this which was relieved by transfusion. During the interim she had been in fairly good health. Splenectomy was planned for if the crisis was controlled. 1. What mechanism brings on these acute attacks when the patient is free from symptoms for years? 2. What possibility is there of this condition developing in the child? 3. What are the earliest signs or symptoms by which this condition may be detected in the child? 4. In Queries and Minor Notes for April 6 you say "splenectomy is indicated if acute attacks occur." What would have been the best method of controlling the phase in the case cited prior to splenectomy? 5. Is vitamin C of any value in these cases?

M.D., New York.

ANSWER.—1. The mechanism that brings on acute attacks in congenital hemolytic anemia is not understood. Such attacks may be spontaneous or precipitated.

2. In a family in which one of the parents is suffering from congenital hemolytic anemia an average of half of the children may be expected to be carriers of the disease.

3. The presence of the latent stage of congenital hemolytic anemia is characterized by increased fragility of the erythrocytes to hypotonic salt solution and by spherocytosis of the red cells. Spherocytosis is recognized by an increase in the volume-thickness index (Haden, *Am. J. M. Sc.* 188:441 [Oct.] 1934). Excessive hemolysis of the red cells is associated with anemia, reticulocytosis and jaundice.

4. There is no way to control an acute hemoclastic crisis except by blood transfusions and splenectomy. Doan, Curtis and Wiseman (*THE JOURNAL*, Nov. 16, 1935, p. 1567) consider emergency splenectomy a life saving procedure in such cases.

5. There is no evidence that vitamin C is of any value in cases of this sort.

FREQUENCY OF URINATION IN YOUNG GIRL

To the Editor:—The answer to the question "Frequency of Urination in Young Girl" (*The Journal*, June 22, 1940, p. 2491) does not specifically discuss the most likely diagnosis in this case, namely, chronic granular urethritis. Folsom (*ibid.*, Nov. 7, 1931, p. 1345), in his discussion of the glands of the female urethra, has pointed out that the characteristic inflammatory changes are by no means limited to adult women. Moore and I have published observations on the unsuspected common occurrence of granular urethritis in young girls characterized by disturbance of micturition with normal urine (*Spence, H. M., and Moore, Halcuit: Female Urethra in Childhood, Texas State J. Med.* 35:234 [July] 1939, and *Spence, H. M.: Granular Urethritis in Women, J. Urol.* 43:199 [Jan.] 1940). In the query the diurnal nature of the frequency and the absolutely normal urine would be more suggestive of urethral disease than of tuberculosis or a neurologic lesion. A urethroscopic examination with careful attention to the caliber of the urethra and the presence of papillary or cystic masses is indicated. If the suspected lesion is found, simple urethral dilations will result in dramatic relief.

Harry M. Spence, M.D., Dallas, Texas.

Medical Examinations and Licensure

COMING EXAMINATIONS

BOARDS OF MEDICAL EXAMINERS BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL, September 14, page 956.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Part III, Baltimore and New York during October and Boston during November. Exec. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Written*. Various centers. Feb. 20. Final date for filing application is December 21. *Oral*. Cleveland, May 31-June 1. Final date for filing application is April 1. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Oral*. Chicago, Dec. 6-7. Applications for Group A must be on file not later than Nov. 1. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: Chicago, Oct. 18-19. Sec., Dr. R. Glen Spurling, 404 Brown Bldg., Louisville, Ky.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: Part I Group B examinations, locally, Jan. 4, 1941, at 2:00 P. M. Final date for filing application is Oct. 5. Part II, Groups A and B, Cleveland, Ohio, June 1941, immediately prior to opening of A. M. A. meeting. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: *Oral*. Cleveland, Oct. 5. *Written*. Various centers, March 8. *The only written examination during 1941*. Applications must be on file not later than Dec. 1. Sec., Dr. John Green, 6830 Waterman Ave., St. Louis.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: *Oral and written*. New Orleans, January 1941. Final date for filing application is November 15. Sec., Dr. Fremont A. Chandler, 6 N. Michigan Ave., Chicago.

AMERICAN BOARD OF PEDIATRICS: New York, March 30-31, following the Region I meeting of the American Academy of Pediatrics. Chicago, May 18, following the Region III meeting of the American Academy of Pediatrics. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: *Oral*. New York, December 18-19. Final date for filing application is October 8. Sec., Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: Boston, Sept. 26-29. Sec., Dr. Byrl R. Kirklin, 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF UROLOGY: *Oral and Written*. Chicago, February 1941. Applications must be on file not later than Oct. 15. Sec., Dr. Gilbert J. Thomas, 1009 Nicollet Ave., Minneapolis.

Wisconsin June Report

Dr. H. W. Shutter, secretary, Wisconsin State Board of Medical Examiners, reports the written and practical examination for medical licensure held at Milwaukee, June 25-27, 1940. The examination covered twenty subjects and included 100 questions. An average of 75 per cent was required to pass. Ninety-three candidates were examined, all of whom passed. Thirty-one physicians were licensed to practice medicine by reciprocity. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
College of Medical Evangelists	.....	(1940)	80
Loyola University School of Medicine	.....	(1940)	85, 85, 87
Northwestern Univ. Medical School (1940)	80, 82, 83, 84, 84, 85, 86		
Rush Medical College	.....	(1939)	81, 82, 83, 84, 84
University of Illinois College of Medicine	.....	(1940)	81, 82, 88
Harvard Medical School	.....	(1939)	83, 86
University of Minnesota Medical School	.....	(1939)	82, 84, (1940)
University of Oklahoma School of Medicine	.....	(1939)	80
University of Oregon Medical School	.....	(1936)	87
Marquette University School of Medicine	.....	(1940)	80,
80, 82, 82, 82, 82, 83, 83, 84, 84, 84, 84, 85, 85,			
85, 85, 85, 85, 85, 85, 86, 86, 86, 87, 87, 87, 87,			
88, 89			
University of Wisconsin Medical School	.....	(1938)	83,
84, (1939) 76, 77, 79, 81, 81, 82, 82, 82, 82, 82,			
83, 83, 83, 83, 83, 83, 83, 83, 84, 84, 84, 84, 84,			
85, 85, 85, 85, 85, 85, 86, 87, 87, 87			

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas School of Medicine	(1938)	Arkansas
College of Medical Evangelists	(1936)	Michigan
Loyola University School of Medicine	(1929), (1939)	Illinois
Northwestern University Medical School	(1939)	Illinois
Rush Medical College	(1936)	Iowa
University of Illinois College of Medicine (1914), (1924), (1937), (1939, 3)			
State University of Iowa College of Medicine	(1936)	California
Johns Hopkins University School of Medicine	(1932), (1936)	Maryland
University of Michigan Medical School	(1938)	Michigan
St. Louis University School of Medicine	(1938)	Missouri
Washington University School of Medicine	(1937)	Missouri
University of Nebraska College of Medicine	(1936), (1938)	Nebraska
University and Bellevue Hospital Medical College	(1922)	Missouri
University of Buffalo School of Medicine	(1932)	New York

University of Cincinnati College of Medicine	.....	(1937)	Ohio
University of Oregon Medical School	.....	(1935)	Illinois
University of Pittsburgh School of Medicine	.....	(1936)	Minnesota
Vanderbilt University School of Medicine	.....	(1935)	Tennessee
Marquette University School of Medicine	.....	(1939)	S. Dakota
University of Wisconsin Medical School	.....	(1936)	Minnesota
(1936), (1938) Illinois, (1937) Oregon			

Puerto Rico March Report

Dr. O. Costa Mandry, secretary, Board of Medical Examiners of Puerto Rico, reports the written and practical examination for medical licensure held at San Juan, March 5, 1940. The examination covered nineteen subjects and included seventy-eight questions. An average of 75 per cent was required to pass. Eight candidates were examined, six of whom passed and two failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Tulane University of Louisiana School of Medicine	(1937)	75.6
Middlesex College of Medicine and Surgery	(1929)	75.1
University of Michigan Medical School	(1936)	84.2
University of Pennsylvania School of Medicine	(1938)	83.5
Université de Paris Faculté de Médecine	(1938)	75
Universidad Nacional Facultad de Medicina, Mexico	(1934)	80.9

School	FAILED	Year Grad.	Number Failed
Midwest Medical College, Kansas City	(1935)	1
Université de Paris Faculté de Médecine	(1937)	1

Book Notices

Cancer: A Manual for Practitioners. The Committee on Publication [representing the Massachusetts Medical Society and the American Society for the Control of Cancer]: George W. Holmes, Chairman, Ernest M. Daland, M.D., Shields Warren, M.D., and Channing C. Simmons, M.D., editor. Cloth. Pp. 284, with 2 portraits. Boston: Massachusetts Department of Public Health, Division of Adult Hygiene, 1940.

This compact little volume, published by a committee representing the Massachusetts Medical Society and the American Society for the Control of Cancer, is notable for its unusual purpose and content. Written expressly to present to the general practitioner a general survey of cancer together with information pertaining to the problem of early diagnosis and treatment, it serves also to stimulate an interest in the progress of cancer work and to point out the urgent need for an adequate program of control. It is of particular interest to practitioners in Massachusetts, since there is included an outline of the Massachusetts cancer program and a survey of the various facilities for diagnosis, therapy and research. In addition, distribution of this volume to practitioners of Massachusetts is made possible by funds obtained from the U. S. Public Health Service and by the Massachusetts branch of the Women's Field Army of the American Society for the Control of Cancer. The material shows careful arrangement and is commendable for its clarity and brevity. Each chapter is contributed by an individual particularly interested in the subject for review. The broad aspects of cancer are presented in the introductory chapters, which include a historical survey, an analysis of the epidemiologic aspects of cancer and a description of the principles of therapeutic procedures employed at the present time. The chapters which follow are devoted to the various types of cancer—classification being based on the site of origin of the lesion (cancer of the lip, cancer of the breast, cancer of the ovary). The leukemias, Hodgkin's disease and allied disorders also are considered. The chapters are short and convey the essentials of the subject under discussion. Since exhaustive dissertation is not within the scope of this book, it would be necessary to consult more complete textbooks for detailed information. The character of the book hardly permits review of various controversial opinions and ideas, although in some instances individual inclinations are reflected. On the whole, the material is adequately and conservatively treated. Valuable additional chapters for the practitioner contain suggestions for lay talks on cancer and an explanation of the purpose and results of activities for the control of cancer. The committee for publication has prepared a well integrated, practical manual which augments the educational features of any cancer control program.

Rural Health Work in Hungary. By Dr. B. Johan, Undersecretary of State. Publications of the State Hygienic Institute of Hungary, No. 9. Paper. Pp. 230, with 118 illustrations. Budapest, 1939.

Twelve years ago a complete system of medical care, both preventive and curative, was established for the rural areas in Hungary. This health organization centers around the State Institute of Hygiene, the establishment of which was prompted by grants from the Rockefeller Foundation, and through this institute official control has been provided for the preventive health services and for affiliation with the Green Cross Service, which corresponds to the American plan for public health nursing. Hungary has been divided into twenty-six districts, each with its chief health officer. Only physicians who have served as local health officers for not less than five years are eligible to this appointment. In 1938 there were 190 local health officers in Hungary who prior to such appointment must serve an apprenticeship as a community or village physician and must have passed the final examinations subsequent to taking a nine months special course for health officers. The actual health work in the villages is carried on by the village physicians, of whom in 1939 there were 1,193, an average of one for each 4,900 of the population. The duties of the village physicians include the practice of curative medicine and responsibility for the public health activities of the community. They are charged with the execution of measures to prevent the spread of communicable disease, control the water and food supply, supervise the health of children at school, issue certificates of death, participate in necropsies and direct and supervise the public health activities. The success of the program of health education depends largely on the ability of the village physician and the public health nurse. Health centers have been established in the rural areas where both curative and preventive services are provided. The author provides many interesting graphs and statistical tables portraying the rise and fall of disease in different parts of Hungary, especially in relation to the intensiveness of health education. There are included in this monograph plans of health centers and reproductions of posters used in the program of propaganda.

A Textbook of Surgery. By John Homans, M.D., Clinical Professor of Surgery. Compiled from Lectures and Other Writings of Members of the Surgical Department of The Harvard Medical School. With a Special Bibliographical Index. Fifth edition. Cloth. Price, \$8. Pp. 1,272, with 530 illustrations by Willard C. Shepard. Springfield, Illinois & Baltimore: Charles C. Thomas, 1940.

This has been revised and brought down to date in many particulars. General surgical subjects such as repair of wounds, surgical bacteriology, technic, suppuration, trauma and specific diseases are discussed first. To each chapter there is attached a historical prologue which is both interesting and instructive. These historical sketches aid greatly in the proper introduction of the student to surgery. The anatomy of the locale under discussion is well described and frequently clarified by a simple line sketch. Diagnosis of surgical diseases together with etiology and pathology is treated in a thorough and scholarly manner. There is a trace of pedantism, as evidenced by a tendency to involved sentence structure and a rather stilted style of writing. In many portions, however, the flow of words is free and easy and is pleasantly received by the medical student. The greater portion of the book deals with specific surgical problems of the various bodily systems. One of the most excellent sections concerns thoracic surgery. The problem of empyema and pulmonary infection is discussed. The importance of postoperative pulmonary complications cannot be overemphasized as a cause of morbidity. These subjects are fully presented and represent a valuable educational source. Heparin is mentioned as a means of treatment of pulmonary embolism, indicating the authors' ability to keep this textbook completely modern. The chapters on neurosurgery, inspired as they were by Cushing, deserve mention. Anesthesia is another subject presented in a clear and scientific manner. As a textbook for general use by medical students, this volume is not surpassed by any other. The illustrations are usually graphic but, nevertheless, simple. A few illustrations are not well chosen. The pictures of basal and squamous cell carcinoma on page 197, for example, represent advanced stages of these diseases. They are likely to be misleading in that it is rare for the contemporary physician to see

these diseases in such advanced stages. Such drawings have little place in the modern textbook, in which early diagnosis and treatment should be stressed. The general competence of the book is well exemplified by the large bibliographic index and the numerous references. Successful revision enables this book to continue as a useful teaching tool.

Traité d'ophtalmologie. Publié sous les auspices de la Société française d'ophtalmologie. Par MM. P. Baillart, Ch. Coutela, E. Redslob, E. Velter. René Onfray: Secrétaire général. Tome VII: Neurologie (Fin): Chirurgie. Par MM. J. Bruneau et al. Cloth. Price, \$10.50. Pp. 931, with 414 illustrations. Paris: Masson & Cie, 1939.

The seventh of this eight volume system appeared on schedule and properly resembles its predecessors in clothing and character. The first third of the volume is devoted to the concluding phases of ocular neurology with the following subdivisions: peripheral and central disturbances of the oculomotor apparatus by Velter of Paris, strabismus by Onfray of Paris, nystagmus by Coppez of Brussels, ocular disturbances of trigeminal origin by Cerise and Thurel of Paris, semeiology of ocular troubles in disturbances of the central nervous system by Velter of Paris, neurosurgical diagnosis of disturbances in the region of the chiasm by Vincent and Puech of Paris, and intracranial hypertension and cerebral tumors by Martel and Guillaume of Strasbourg. These chapters vary considerably, as is to be expected from a mélange of authors, but on the whole are well written and clear in context and contain some excellent illustrations.

The second two thirds of the volume is devoted to ocular surgery, divided as follows: surgical generalities by de Saint-Martin of Toulouse, the lids and conjunctiva by Duverger and Velter of Limoges and Paris, the lacrimal apparatus by Merigot de Treigny of Paris, the cornea, sclera and iris by Duverger and Velter, extracapsular extraction of cataract by Van Lint of Brussels, intracapsular extraction of cataract by de Saint-Martin of Toulouse, luxation of the lens by de Saint-Martin, detachment of the retina by Veil and Dollfuss of Paris, anti-glaucomatous operations by Duverger and Veil, strabismus by de Saint-Martin and Onfray, enucleation by Carlotti of Nice, the orbit by Terrien of Paris, foreign bodies in the eye and orbit by Duverger and Velter, and prostheses by Bruneau and Charpentier of Paris. That is an enormous amount of surgery to try to compress into 530 none too large pages, especially when the descriptions are supposed to be encyclopedic in extent. This is probably the most spotty part of the entire system. Much of it is good, although too abbreviated, but some unfortunately falls below textbook level. However, the illustrations are excellent, especially those in the chapters by Duverger and Velter. The bibliography is rather weak and only too often purely Gallic in character. The book making and general ensemble are up to the standards set in the previous volumes.

Your Allergy and What to Do About It. By Milton B. Cohen, M.D., and June B. Cohen. Cloth. Price, \$1.50. Pp. 177, with illustrations. Philadelphia, New York & London: J. B. Lippincott Company, 1940.

This book is written for the patient. Allergy holds a prominent position in the public eye and it requires more than a brief article to answer such questions as How are my symptoms produced? Can my allergy be cured? Hence this book. The authors' approach to the subject is biographic. Allergy has molded the lives of some famous men. Marcel Proust locked himself into a room where he could be relieved of asthmatic attacks and to amuse himself wrote several volumes that are classics. General William T. Sherman was comfortable when in the field but at home suffered from allergic attacks; he was sensitive to house dust. The French physician Charli's Richet sailed on the yacht of the Prince of Morocco to experiment with the poisonous proteins of the sea anemone. His experimental animals remained healthy after the first injection of the protein, but a few minutes after the second injection one of them suddenly died. Richet inoculated a second experimental animal with egg albumin and it died after the second injection. Thus the dose which, according to the principle established by Pasteur in his experiments with rabies, should have protected the animals from harm had so changed their bodies as to remove protection altogether. Physicians then began to wonder about some of their patients who became ill a few days after injection

of diphtheria antitoxin; they saw some relation between this and the startling results of Richet's experiments. In a few years medical men began to relate such strange diseases as hay fever and asthma to anaphylaxis and at last bound together many strange complaints under the term "allergy" or altered reactivity. In their small book the authors explain how the symptoms of allergy are produced and how the diagnosis is made. Special attention is given to hay fever, asthma, eczema, allergic rhinitis and hives. The problem of treatment of allergic diseases as well as details of the pathogenesis are not well understood. Perhaps these problems may be solved from some physical or chemical discovery by workers in fields apparently remote from medicine but still pertaining to the workings of the living cell. Thus our understanding of allergy may be entirely changed and the appearance of the allergic state may become no more than an occasional curiosity. The family of allergic diseases may then become merely an interesting episode in medical history.

Complete Guide for the Deafened. By A. F. Niemoeller, A.B., M.A., B.S. With a foreword by Harold Hays, M.D., F.A.C.S. Cloth. Price, \$3. Pp. 256, with one illustration. New York: Harvest House, 1940.

The number of people in the United States who suffer from impaired hearing has been variously estimated at from ten to seventeen million. Like many other statistical figures, this is probably inaccurate, for no one can ever know even the approximate number. However, those afflicted are doubtless in need of some such book as this, since they so often seem to be hopelessly engulfed in their wretched state and know not how to orientate themselves. While not "complete," these seventy-seven chapters consider the origin and kinds of hearing defects, the influence of heredity, drugs, disease, old age, and mental attitudes, reeducation, employment, recreation, legislation, social considerations, personal adjustments, and hearing aids. An effort is made to overcome the so-called social stigma, the tendency to withdraw from one's fellows and the all important element of maladjustment. Advice is given to parents as to their attitude toward deafened children, how they can enjoy the radio, movies, sermons, public lectures, music, conversation with friends and the telephone. In such a small volume it is impossible, of course, to do more than touch on many phases of this problem, but the author has succeeded in covering much ground, and he attempts to lead the deafened to a richer, fuller life. Fraudulent and harmful aids and devices such as "ear oil" are explained and condemned in an effort to spare the victims agony of mind and spirit and depletion of purse. The author's style is fluent and conversational, which makes for easy reading. From a medical point of view the facts are accurate in the main, and no attempt has been made to overeducate the reader.

Le guide thérapeutique du médecin praticien. Par Jean Trabaud, professeur de clinique médicale, et J. R. Trabaud. Tome I: Les infections et les intoxications endogènes et exogènes. Tome II: Les maladies de l'appareil respiratoire. Tome III: Les maladies du tube digestif et de ses annexes. Tome IV: Les maladies des appareils cardio-vasculaire et urinaire. Les maladies du sang. Tome V: Les maladies nerveuses et mentales. Préface de M. le Professeur Tanon. Paper. Price, Tome I, 55 francs; Tome II, 43 francs; Tome III, 48 francs. Pp. 288; 210; 243; 284; 253. Paris: Vigot Frères, 1940.

The task the authors have set themselves is a pretentious one indeed; namely, to encompass the entire field of therapeutics in a manual consisting of eight small format volumes, viz. (1) infections and intoxications; (2) diseases of the respiratory organs; (3) diseases of the digestive tract; (4) cardiovascular and urinary diseases; (5) nervous and mental diseases; (6) diseases of children; (7) eye, ear, nose and throat diseases, and (8) genito-urinary and cutaneous diseases. The last three still await publication. A concise description of symptomatology of each disease is followed by recommendation of a suitable dietary regimen, hygienic measures, general and local treatment, including physical therapy, irradiation and spas; prescriptions follow. As the authors claim that the majority of patients prefer proprietary medicines to official preparations, the first group dominates the picture. As to the spas, only French watering resorts are mentioned. A cursory perusal of the five volumes has disclosed several omissions, for instance the use of sulfanilamide in the treatment of gonorrheal arthritis or of thiamine, pituitary or x-rays in the treatment of herpes zoster. Not less than thirty-five pages is allotted to prescriptions for various types

and phases of tuberculosis. There are many therapeutic suggestions which do not coincide with generally accepted points of view in this country. As countless French proprietary drugs are specified and only French resorts are recommended for balneologic treatment, the work may be fitted to the needs of French colleagues but cannot be recommended for practical use by American physicians.

Illustrative Electrocardiography. By Julius Burstein, A.B., M.D., Associate Electrocardiographer and Chief of the Cardiac Clinic, Morrisania City Hospital, New York. Originally written by the late Joseph H. Bainton, A.B., M.D., and Julius Burstein, A.B., M.D. Second edition. Cloth. Price, \$5. Pp. 292, with 106 illustrations. New York & London: D. Appleton-Century, Incorporated, 1940.

This edition, like the preceding one, is based on a description of illustrative electrocardiograms. In this edition the author has added the subject of chest leads and included a verbatim copy of the report of the American Heart Association Committee on precordial leads. The method of presenting the electrocardiograms is commendable, and it is regrettable that a large number of errors nullify its usefulness. The following are some of the typical errors:

Plate 17 shows a sinus arrhythmia with nodal escape and dissociation and not a wandering pacemaker. It is questionable whether the attempt to locate the origin of the premature systole as stated on page 49 is correct. In plate 20 the author mistakes a sinus P wave occurring at the proper time for a premature P wave. In plate 21 the author overlooks a pulsus trigeminus. In plate 22 the author fails to draw attention to the effects of the premature systole on the contour of the succeeding beat. In plate 26 the author fails to recognize that the first premature complex is a fusion beat. In plate 27 the author labels P waves without evidence for doing so. The curves in plates 27 and 28 should better have been called supraventricular tachycardia. The diagnosis in plate 30 is problematic, and it would have been better to leave this illustration out. The author should have pointed out in plate 31 that, in addition to the short paroxysms, there are single premature ventricular extrasystoles. In plate 33 the author should have labeled the auricular waves as F instead of P waves. Plate 37 would be considered impure flutter. In plate 40 the author overlooks premature systoles in leads 1 and 3. It is doubtful whether the slight variation in the PR interval in plate 44 is worth mentioning. Plate 47 is complex and might have been left out, and in lead I are two instances in which there is 1:1 conduction. In plates 48, 87 and 88 the presence of intraventricular block might be questioned. Plate 49 is misdiagnosed; it is an instance of second degree auriculo-ventricular block with a Wenckebach phenomenon and with nodal escapes (the second and sixth complexes). The subject of T wave abnormalities on pages 134 and 135 is poorly presented; the author does not distinguish between the S-T segment and the T wave; the idea that T wave size is related to vigor of the heart is erroneous. The interpretation of plate 54 is wrong. There is no reason to suspect a myocardial infarct in plate 56. The prolonged duration of QRS in plate 57 is overlooked. The statement that the high voltage in plate 65 indicates a good myocardial vigor is without foundation. This is true also of the statement regarding QRS in plate 66 A. In plate 74 the term "old coronary occlusion" is a bad one. Plate 75 shows a partial auriculoventricular block with a Wenckebach phenomenon and not a complete auriculoventricular block. In plate 77 the so-called premature contraction in lead I is an extracardiac artefact. In plate 79 all the premature systoles are auricular in origin. The author overlooks the fact in plate 82 that many of the premature extrasystoles are blocked, giving rise to the pauses. In plate 84 the pauses identified as sino-auricular block are really due to blocked auricular premature systoles. Plate 89, when handled to conform with the normal electrocardiogram, shows left ventricular preponderance. The P wave changes of the dominant beats in plate 91 are due to the effect of the auricular premature systoles. Plate 92 A is probably an instance of complete auriculoventricular dissociation. No useful purpose is served in showing the original lead 4 in plate 96, since this lead is no longer utilized.

Further, a number of the illustrations are complex. Considering the handling by the author, they could have been

omitted. Attention is drawn to the foregoing errors in order to demonstrate the need of care in the presentation of such electrocardiograms for the use of physicians. A great deal of harm in educating the ordinary reader can be done by loose writing and by erroneous concepts which serious students in the field would not make. Because of these circumstances, and despite the excellence of the reproductions, this book cannot be recommended.

Biochemistry of Disease. By Meyer Bodansky, Ph.D., M.D., Director of the John Sealy Memorial Laboratory and Professor of Pathological Chemistry, University of Texas School of Medicine, Galveston, and Oscar Bodansky, Ph.D., M.D., Lecturer in Biochemistry, Graduate Division, Brooklyn College, New York. Cloth. Price, \$8. Pp. 684, with 72 illustrations. New York: Macmillan Company, 1940.

The tremendous strides made in recent years in the development of scientific medicine are reflected in this book. It is apparent that the rapid progress has depended to a great extent on the more complex biochemical studies and that a sound knowledge of this phase of medicine is essential for further elucidation of disease and its treatment.

This book is apparently not intended to be a textbook of clinical biochemistry but rather a critical review of the investigational work in this field. Much of the investigational work presented in this volume is still controversial and the authors have wisely refrained from making their statements dogmatic and conclusive although it is possible that some readers would desire more definite statements. The evaluation of the data in this book is uniformly sound. The scope of the book is wide and the enormous amount of information is presented in a clear, concise and logical manner. Obviously the authors could not go into great detail on many of the subjects, but readers may easily follow their interest in any subject through the use of the ample bibliography. Each chapter starts with a brief but concentrated discussion of the normal biochemical relationships of the particular subject in view. Then with each subdivision there is another brief introduction of the fundamental concepts before the conditions found in disease are presented. In this way the reader's memory is constantly refreshed and his understanding of the subject matter improved. There are included in the book discussions on subjects which have been recently expanded and which are of the utmost importance in modern medicine. These chapters are on the biochemical aspects of the endocrines, vitamins, problems of gynecology and obstetrics, and neurologic and psychiatric disorders. These features will be greatly appreciated by physicians and students because of the widespread interest in these subjects and their growing importance in medicine.

While this book is not a reference work for physicians to use in administering practical therapy or a course in laboratory technic for the diagnosis of disease, it is an excellent means by which the modern physician may keep abreast of the scientific developments in disease, which might be quite impossible if the data were to be obtained directly from the literature.

Liquor: The Servant of Man. By Walton Hall Smith and Ferdinand C. Heilwig, M.D. Cloth. Price, \$2. Pp. 273. Boston: Little, Brown & Company, 1939.

In this book there is an attempt to make an unbiased and scientific survey of the real effects of alcohol on the human system. The authors believe that the facts concerning alcohol have been buried under a haze of misconception. The history of drinking, the physiologic effects of alcohol and the relation between alcohol and disease are discussed. Some information concerning the psychology of drinking is included. Startling are some of the statements which are made:

There has been found no evidence that prolonged and copious use of alcohol causes any disease.

It is the present opinion of many authorities that, instead of causing arteriosclerosis, alcohol can act to retard it.

The statement is also made that alcohol is an active ingredient in all intoxicants and that its toxicity is increased and not decreased by aging or by congenics or substances mixed with it to make it more palatable. The book is written for the average person and not for the problem drinker. The average individual will find much of interest in it.

Poisons: Their Isolation and Identification. By Frank Bamford, B.Sc. With a foreword by Professor Sydney Smith, M.D., F.R.C.P., Regius Professor of Forensic Medicine, University of Edinburgh, Edinburgh. Cloth. Price, \$4. Pp. 344, with 21 illustrations. Philadelphia: Blakiston Company, 1940.

Here is a book that should be well received by the chemist who is occasionally called on to do the kind of work indicated by the title. Written by a man who was intimately acquainted with the problems that confront the chemist in medicolegal laboratories, the many methods and tests must have been subjected to practical laboratory trials. To the toxicologist it will be useful as a compact and systematic arrangement of the more important poisons with which he may come in contact. The chapter on the isolation and identification of alkaloids is especially good. The many tests that depend on color reactions are open to criticism. In the minds of many, the best that can be said for such tests is that they are indicative. Microchemical tests, especially descriptions of crystals obtained by microsublimation, could have been given more attention. Photomicrographs, though space consuming, would have been of assistance to the chemist not actively engaged in this kind of work.

Chemotherapy and Serum Therapy of Pneumonia. By Frederick T. Lord, M.D., Member of the Board of Consultation, Massachusetts General Hospital, Boston, Elliott S. Robinson, M.D., Ph.D., Director, Division of Biologic Laboratories, Massachusetts Department of Public Health, and Roderick Heffron, M.D., Medical Associate, The Commonwealth Fund, New York. Cloth. Price, \$1. Pp. 174, with 9 illustrations. New York: Commonwealth Fund; London: Oxford University Press, 1940.

This small volume, simply and interestingly written, with an eye to detail, is a mine of information which summarizes present opinions concerning the best methods to be employed in the treatment of lobar pneumonia. In addition it gives adequate brief summaries of existing knowledge concerning the etiology, epidemiology, diagnosis and past and present views on the prognosis of lobar pneumonia. It is the opinion of the reviewer that the authors have presented the respective merits of anti-pneumococcus serum or sulfapyridine in a critical and fair manner. While he might argue with the authors over the proposed criteria which are set up as indications for combined serum and chemotherapy, he believes that this is one of the books that should have a place on every physician's desk.

Mammalian Genetics. By William E. Castle, Research Associate in Genetics, University of California, Berkeley. Cloth. Price, \$2. Pp. 169, with 131 illustrations. Cambridge: Harvard University Press, 1940.

In this small book Professor Castle, who was a pioneer and is a recognized authority in the field of mammalian genetics, has summarized what is known about the inheritance of characters in laboratory and domestic mammals. Especially interesting is a table of comparative gene mutations found in the rabbit, house mouse, Norway rat, black rat, field mouse and guinea pig. His discussions of sex differentiation and sex determination are brief but they are good summaries of what is known about these topics. In his chapter on maternal inheritance he takes to task those who would attribute all inheritance to the genes. There is only an occasional reference to the genetics of human characters. The book is highly recommended to those who do not have the time to read the detailed papers in this important field. To those working in the field it is a welcome summary and synthesis.

Asthma and the General Practitioner. By James Adam, M.A., M.D., Surgeon-in-Charge, Asthma Clinic, Stobhill Hospital, Glasgow. With foreword by James Bridle, M.D. Cloth. Price, \$2. Pp. 137. Baltimore: William Wood & Company, 1939.

One can briefly summarize the good points of this book by saying that the author insists that the asthmatic patient be given a complete medical workup and should not be looked on as only a problem in allergy but a real medical problem, taxing the ingenuity of even the most facile mind. However, what the author apparently believes are newly discovered truths have been known and practiced by American physicians for years in the treatment of asthma. Many dogmatic positive statements are made which are not supported by scientific observation or laboratory investigations. It is insufficient to become emotionally aroused about a method of treatment without adducing scientific proof.

Annual Report for the Year 1939, Central Narcotics Intelligence Bureau, Egyptian Government. Paper. Pp. 185, with illustrations. Bulag, Cairo: Government Press, 1940.

The Annual Report of the Central Narcotics Intelligence Bureau for 1939 contains numerous interesting accounts of investigations by which the Intelligence Bureau has been able to seize purveyors of narcotics in Egypt, the narcotics being principally hashish and opium. There are specific reports of cases in which three doctors and two chemists were concerned with the sale of narcotics. Most interesting was the discovery of a great amount of opium smuggled into Egypt in the stomach of camels, the opium being kept in a zinc container which the camel swallowed. It has been determined that it will be necessary to install x-ray equipment in the custom station through which 30,000 camels pass each year in order to make a routine study of a certain percentage of the camels in order to detect the presence of opium.

Your Child's Development and Guidance Told in Pictures. By Lois Harden Meek, Ph.D. Cloth. Price, \$2. Pp. 166, with 163 illustrations by Lucia Manley. Philadelphia, New York, Toronto & London: J. B. Lippincott Company, 1940.

This picture book for parents portrays and discusses the life of children from 1 to 6 years old. Growth, daily routine, eating, elimination, relations with family and other children, training, fear and illness are all discussed. However, a chapter on play is omitted and, according to the author, is being reserved for a book of its own. Proper methods, pitfalls and problems are portrayed from which the parent is to take only what concerns his particular child. Thus this book demonstrates that children of the same age are not all alike and that most children are capable of doing a number of things for themselves and of performing physical feats parents do not often credit them with the ability to do. Because the text which accompanies these excellent pictures, drawings and charts is poorly written, reading and comprehension is often difficult. However, the material presented is sound, and the author also includes her references and a list of other books for parents.

A Textbook of Histology. By Harvey Ernest Jordan, A.M., Ph.D. Professor of Anatomy and Director of the Anatomical Laboratories, University of Virginia, Charlottesville. Eighth edition. Cloth. Price, \$7. Pp. 690, with 609 illustrations. New York & London: D. Appleton-Century Company, Inc., 1940

The general plan of this book remains unchanged; the author has, however, incorporated important additions to the subject as recorded in the recent literature, as well as many new illustrations. Experience has shown that teachers of histology prefer to use their own laboratory outlines. The author has therefore eliminated the chapters on directions for laboratory work and on histologic technic, which is taken up in detail in many special books on technical methods. References to the literature are recorded as footnotes and reassembled in a bibliography at the end of the book, thus making it convenient for the student who desires to pursue further the study of particular subjects. The numerous illustrations are well adapted to the text and some of them are in color.

Practical Dietetics With Reference to Diet in Health and Disease. By Alida Frances Patee. Twenty-second edition. Cloth. Price, \$3. Pp. 868, with illustrations. Mount Vernon, N. Y.: The Author, 1940.

What foods are most effective in increasing hemoglobin? What foods supply potassium? This book answers these and many other questions in its tables, which list foods under such headings in the order of their importance. Indeed, an extensive appendix is composed entirely of tables of food values, including those which are rich in minerals, tables listing foods which are highest in cellulose, highest in cholesterol, foods that will produce flatulence, foods which contain nicotinic acid, foods which are acid forming and foods which contain the various vitamins. Diet therapy is discussed by specialists who go into great detail about the dietetic treatment of diabetes mellitus, arthritis and gout, obesity, emaciation, Addison's disease, tuberculosis, constipation, nephritis, the anemias, heart disease, pregnancy, typhoid and infant feeding. Among the details on the preparation of foods for both the sick and the well person, it is shown how to prepare salads, cook vegetables and make different kinds of bread, soups and other dietary products. This

book is a storehouse of information. The arrangement, as in previous editions, follows the "Curriculum Guide for Schools of Nursing" issued by the National League of Nursing Education. Parts of this edition have been entirely rewritten.

Let's Talk About Your Baby. By H. Kent Tenney, Jr., M.D., F.A.A.P., Associate Professor of Pediatrics, University of Wisconsin Medical School, Madison. With a foreword by Dr. Joseph Brenemann, Chief of Staff, Children's Memorial Hospital, Chicago. Second edition. Cloth. Price, \$1. Pp. 115, with illustrations. Minneapolis: University of Minnesota Press, 1940.

The first edition of this book was published privately by Dr. Tenney for his patients. Written in the conversational manner, it covers the subjects of furniture, clothing, feeding, training and health for the baby's first year as well as most of the relatively unimportant things which worry many mothers. The baby's point of view, a common sense attitude and the availability of the doctor are all stressed. The manner of presentation and the large amount of information included make this book enjoyable and valuable reading. It is, indeed, a perfect book for parents.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Evidence: Osteopath as Expert Witness in Malpractice Suit Against Physician.—The plaintiff on March 3, 1936, was struck on his head by a falling tile. He was taken to the defendant physician, who examined him and, finding no objective evidence of injury, gave him some medicine and told him not to go back to work until he felt better. Soon thereafter he commenced to suffer pain in his head, accompanied by nausea and dizziness. He returned to work the next day but on the day thereafter his pain increased and he again visited the defendant, who gave him some liniment and advised him not to work until the next week. After attempting unsuccessfully to work the following week he again returned to the defendant, who took his blood pressure and found it above normal. At the time of his next visit to the defendant, after working for one week on the latter's advice, his blood pressure was higher. On the request of the plaintiff's wife that a roentgenogram be taken of the plaintiff's head the defendant caused such to be made, but what it disclosed does not appear in the published report. The plaintiff was hospitalized for thirteen days during which time two lumbar punctures were performed on him by the defendant. Later he brought suit against the physician for malpractice, alleging that he had sustained permanent injuries as the result of the defendant's negligence in failing to take roentgenograms promptly, in failing to diagnose correctly his injury as one of skull fracture and in failing to apply the usual and recognized treatment for skull fracture, namely, immobilization in bed with ice packs to the head and heat to the feet, and for the cerebral hemorrhage which developed. The trial court directed a verdict for the defendant and from a judgment thereon the plaintiff appealed to the court of appeals of Ohio, Lorain County.

At the trial the plaintiff endeavored to establish negligent conduct on the part of the defendant by offering the testimony of two osteopaths as expert witnesses as to the treatment which they would have rendered to the plaintiff if they had been called to treat him. However, on the motion of the defendant, the trial court withdrew this testimony from the consideration of the jury because the testimony of the osteopaths did not indicate that they possessed any knowledge whatever as to the standard of skill, care and diligence ordinarily exercised by practitioners of medicine and surgery. The action of the trial court met with the full approval of the court of appeals. In malpractice actions, said the court, the care, skill and diligence exercised by the defendant is to be judged by that standard of care which ordinarily is exercised by physicians and surgeons of the same school of medi-

cine in the same or similar communities. The court relied for its decision on 21 R. C. L. 383, section 28, which states:

In an action for malpractice a physician or surgeon is entitled to have his treatment of his patient tested by the rules and principles of the school of medicine to which he belongs, and not by those of some other school, because a person professing to follow one system or school of medicine cannot be expected by his employer to practice any other, and if he performs the treatment with ordinary skill and care in accordance with his system, he is not answerable for bad results.

Recognizing the fact that the injury which the plaintiff claimed he had sustained was of such a nature as not to be understood by lay witnesses but required a high degree of expertness for its diagnosis and treatment, the court could find in the record no evidence from which the jury could determine the standard of care, skill and diligence by which the defendant physician's conduct was to be judged. Furthermore, the trial court properly refused to allow the plaintiff to call the defendant as an adversary party for the purpose of cross examining him to establish the standard of care, skill and diligence by which the defendant's conduct should be judged and then by further cross examination to establish that the acts of the defendant complained of were negligent. In the judgment of the court, the plaintiff had even failed to present credible evidence that he had sustained a skull fracture.

Accordingly, the court of appeals held that the trial court had properly directed a verdict for the physician and so it affirmed the judgment in his favor.—*Forthofer v. Arnold (Ohio)*, 21 N. E. (2d) 869.

Medical Practice Acts: Surgical Diathermy by Naturopath Constitutes Unlawful Practice of Medicine.—The defendant, a licensed naturopath, removed "a lump or growth," which he diagnosed as "cancer," from the bottom of Mrs. Larkin's right foot by cauterization with "a surgical diathermy" apparatus, an apparatus commonly used by surgeons. According to the defendant, "electricity . . . was turned on the target [presumably the growth on the patient's foot] through a copper wire connected with a diathermy machine and from one-half to an inch from the target" and the heat emanating therefrom on "the target" produced a burn about 1 inch (2.5 cm.) in diameter and about one-eighth inch (0.32 cm.) deep, which destroyed the growth. For the performance of this procedure the naturopath was convicted of practicing medicine without a license, in violation of the Arizona medical practice act, and was sentenced to the penitentiary. He then appealed to the Supreme Court of Arizona.

The naturopath contended that it is not a statutory offense in Arizona to practice medicine and surgery without a license so to do. Since every one at common law, he argued, could practice medicine or the healing art, it is not a crime so to practice without a license unless some particular statutory provision makes it so. The section of the Arizona medical practice act pertinent to this matter merely provides: "Any person who practices, or attempts to practice, without having a valid, recorded certificate, shall be guilty of a felony . . ." (Revised Code, 1928, section 2560, as amended, Laws, 1935, chapter 99, section 2). This, the naturopath contended, is inadequate to make it a statutory offense to practice medicine and surgery without a license. The Supreme Court, however, held that the provision in question did make it a statutory offense to practice medicine and surgery without a license. This provision is a part of a section of the medical practice act and, in the Revised Code, 1928, it appears under the title "Medicine and Surgery." Provisions corresponding to this particular section appeared in the Revised Statutes, 1913, under the title "Practice of Medicine" and expressly made it a misdemeanor for any person to practice "medicine or surgery" without being licensed so to do. The Revised Code, 1928, said the court, was the result of studies made by a code commissioner whom the legislature prior to 1928 directed to codify the then existing laws and expressly instructed not to make any change in language and remove inconsistencies (Laws, 1925, chapter 35, section 3). The court, concluded therefore, that the omission of the words "medicine and surgery" following the prohibition against unlicensed practice in the section in question had been done merely to eliminate redundancy of language. The effect of the omission was not to exempt one from punishment who practices medicine without a license.

The court was next called on to determine whether or not the acts of the naturopath were within the scope of the license to practice naturopathy which he possessed. In the practice of naturopathy in Arizona, said the court, no medicine may be used and the treatment must be nonsurgical. The naturopathic practice act of Arizona (Laws, 1935, chapter 105) authorizes persons possessing the qualifications therein prescribed, when duly licensed by the board of naturopathic examiners, to practice naturopathy. Section 5 of that act reads:

Naturopathy Defined. For the purpose of this Act, Naturopathy, which includes all forms of physiotherapy, is hereby defined to be: A system of treating the abnormalities of the human mind and body by the use of drugless and nonsurgical methods, and includes the use of physical, electrical, hygienic, and sanitary measures incident thereto.

This section permits a naturopath to use electricity in treating the human body and mind but prohibits him from performing surgical operations. His methods must be nonsurgical and drugless. The operation performed by the defendant was with an instrumentality in use by surgeons, and so it was conclusively surgical in its nature. If the defendant had used a scalpel to cut out the growth instead of burning it out, the act would have been no more surgical. While he had the right to use electrical heat in the practice of naturopathy, he had no right to use it to perform a surgical operation. There was nothing in the evidence to indicate that the defendant carelessly or mistakenly administered an overdose of heat or that he burned his patient by accident. On the contrary, the evidence showed that he intentionally and purposely applied the electricity to destroy the lump on the patient's foot by burning it out. He adopted the surgeon's method of curing cancer, the only one, said the court, that has been discovered to date.

For the reasons stated above, the judgment of conviction was affirmed.—*Nethken v. State (Ariz.)*, 104 P. (2d) 159.

Society Proceedings

COMING MEETINGS

- American Academy of Ophthalmology and Oto-Laryngology, Cleveland, Oct. 6-10. Dr. William P. Wherry, 107 South 17th St., Omaha, Secretary.
- American Association of Obstetricians, Gynecologists and Abdominal Surgeons, 26-28. Dr. James R. Bloss, 418 Secretary.
- Ar Association, White Sulphur Springs, M. Rackemann, 263 Beacon St., Boston, Secretary.
- American College of Surgeons, Chicago, Oct. 21-25. Dr. Frederic A. Besley, 40 East Erie St., Chicago, Secretary.
- American Public Health Association, Detroit, Oct. 8-11. Dr. Reginald M. Atwater, 50 West 50th St., New York, Executive Secretary.
- American Roentgen Ray Society, Boston, Oct. 1-4. Dr. Carleton B. Peirce, Royal Victoria Hospital, Montreal, Canada, Secretary.
- American Society of Anesthetists, New York, Oct. 10. Dr. Paul M. Wood, 745 Fifth Avenue, New York, Secretary.
- American Society of Tropical Medicine, Louisville, Ky., Nov. 12-15. Dr. E. Harold Hinman, Malaria Control Division, Wilson Dam, Ala., Secretary.
- Association of Military Surgeons of the United States, Cleveland, Oct. 10-12. Dr. H. L. Gilchrist, Army Medical Museum, Washington, D. C., Secretary.
- Central Society for Clinical Research, Chicago, Nov. 1-2. Dr. Carl V. Moore, Washington University School of Medicine, St. Louis, Secretary.
- Clinical Orthopaedic Society, Milwaukee and Madison, Wis., Oct. 18-19. Dr. Myron O. Henry, 825 Nicollet Ave., Minneapolis, Secretary.
- District of Columbia, Medical Society of the, Washington, Oct. 15-17. Mr. Theodore Wiprud, 1718 M St., N.W., Washington, Secretary.
- Indiana State Medical Association, French Lick, Oct. 29-31. Mr. Thomas A. Hendricks, 23 East Ohio St., Indianapolis, Executive Secretary.
- Inter-State Postgraduate Medical Association of North America, Cleveland, Oct. 14-18. Dr. W. B. Peck, 27 East Stephenson St., Freeport, Ill., Managing Director.
- Michigan State Medical Society, Detroit, Sept. 24-27. Dr. L. Fernald Foster, 2020 Olds Tower, Lansing, Secretary.
- Mississippi Valley Medical Society, Rock Island, Ill., Sept. 25-27. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.
- Nevada State Medical Association, Las Vegas, Oct. 11-12. Dr. Horace J. Brown, 120 North Virginia St., Reno, Secretary.
- Omaha Mid-West Clinical Society, Omaha, Oct. 28-Nov. 1. Dr. J. D. McCarthy, 107 South 17th St., Omaha, Secretary.
- Pacific Coast Society of Obstetrics and Gynecology, San Francisco, Nov. 6-9. Dr. T. Floyd Bell, 400 Twenty-Ninth St., Oakland, Calif., Secretary.
- Pennsylvania, Medical Society of the State of, Philadelphia, Sept. 30-Oct. 3. Dr. Walter F. Donaldson, 500 Penn Ave., Pittsburgh, Secretary.
- Southern Medical Association, Louisville, Ky., Nov. 12-15. Mr. C. P. Loran, Empire Bldg., Birmingham, Ala., Secretary.
- Southern Minnesota Medical Association, Red Wing, Sept. 23. Dr. Harold C. Habein, 102 Second Ave., Rochester, Secretary.
- Tri-State Medical Society, Shreveport, La., Sept. 25-26. Dr. Ralph H. Riggs, 624 Travis Street, Shreveport, La., Secretary.
- Vermont State Medical Society, Rutland, Oct. 9-10. Dr. B. F. Cook, 154 Bellevue Ave., Rutland, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1930 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

60:249-470 (Aug.) 1940

Calcium Fractions in Infantile Spasmophilia. J. P. Garrahan and G. F. Thomas, Buenos Aires, Argentina.—p. 249.

Pneumococcus Typing in Cases of Pneumonia in Infants and in Children. J. G. M. Bullowa, New York, and H. Simon, Newark, N. J.—p. 256.

*Treatment of Megacolon with Acetylbetamethylcholine Bromide. J. L. Law, Ann Arbor, Mich.—p. 262.

Oral Conditions of Children in Relation to State of General Health and Habits of Life. R. F. Sognnaes and Ruth L. White, Boston.—p. 283.

Bullous Schick Reactions: Their Occurrence During Acute Infectious Diseases. A. E. Fischer, B. Rubin and C. K. Greenwald, New York.—p. 304.

Reasons for High Carbohydrate Requirement of Infants and Children. W. Heymann, Cleveland.—p. 316.

Hospital Infections: III. Ward Study for Sources of Infection. A. P. Long, C. F. McKhann and Lucile L. Cheney, Boston.—p. 322.

*Value of Banana and Banana Powder in Treatment of Infants and Children Having Diarrhea: Two Year Clinical Study. I. J. Wolman and R. L. Roddy, Philadelphia.—p. 333.

Influence of Syphilis on Intelligence of Children. R. L. Jenkins, Warwick, N. Y.; A. W. Brown and Lillian E. Cisler, Chicago.—p. 341.

Clinical Picture of Tuberculosis in Children. Edith M. Lincoln, New York.—p. 371.

Acetylbetamethylcholine Bromide for Megacolon.—

Law states that the neurogenic theory of megacolon is supported by the clinical successes following interruption of the sympathetic nerves or the use of cholinergic drugs which inactivate the autonomic nervous system. Acetylcholine increases the parasympathetic nerve impulses and stimulates peristalsis of the colon. There is no record of the successful use of any cholinergic drug in the management of megacolon. As a remedial agent acetylcholine is limited because, although physiologically potent, its instability and its frequently alarming toxic effects discourage its use. Eight years ago Cowie carefully adjusted doses of acetylcholine and a derivative, acetylbetamethylcholine, and in combination with conservative medical measures designed to promote colonic movement caused an infant suffering from typical megacolon to recover completely. This served as a stimulus for the use of acetylcholine or its derivatives in the treatment of such disorders. Acetylbetamethylcholine bromide has the advantageous pharmacologic properties of acetylcholine but is more stable in the body and produces a definite and continued stimulation of the parasympathetic nerves, usually without untoward toxic manifestations. It slows the cardiac action, lowers blood pressure, dilates peripheral blood vessels, stimulates sweat glands and increases intestinal tone and peristalsis. It may constrict the bronchioles and incite an asthmatic attack, or in large doses it may produce abdominal pain and vomiting. Its effects can be abolished by the subcutaneous injection of $\frac{1}{400}$ grain (0.0001625 Gm.) of atropine sulfate. The drug is fairly stable in tablet form and is suitable for oral administration. With this preparation a method giving highly satisfactory results has been evolved since 1936 for the treatment of megacolon patients. The average initial dose of acetylbetamethylcholine bromide is 0.1 Gm., increased, if necessary, in two or three days to 0.2 Gm. and again after several days by the addition of 0.1 to 0.2 Gm. in midafternoon. Usually 0.2 Gm. after breakfast is effective without the afternoon dose. As the drug becomes effective (from five to ten days) enemas are discontinued, though liquid petrolatum is continued as a mild mechanical aid. When a dosage which produces one or two stools daily is determined, the patient is discharged, usually with instructions to take 0.2 Gm. of the drug one half hour after breakfast, from 1 to 2 tablespoons of

liquid petrolatum every evening and an enema in the event of constipation or distention. Recently prostigmine bromide has been used as an augmentor of acetylbetamethylcholine bromide, as it prevents the destruction of the active principle, acetylcholine, of the latter drug. In moderate dosage prostigmine is safe, it does not disturb blood pressure or heart action and its use may be beneficial. The author used derivatives of acetylcholine in the treatment of megacolon for the following groups of patients: those in whom satisfactory initial drug therapy was abandoned in favor of sympathectomy, those treated with subcutaneous injections for brief periods with little benefit, patients experiencing obstinate relapse after sympathectomy, which was relieved by drug therapy, and patients whose condition was successfully managed by medical therapy.

Banana and Banana Powder for Diarrhea.—Wolman and Roddy used mashed bananas or banana powder in the treatment of ninety-seven patients, from 1 week to 10 years of age, suffering from diarrhea. The results are compared with a control group of eighty similar children treated by a variety of recognized therapies. Diarrhea was defined as the passage of loose, watery, mucopurulent or bloody stools, usually with an increase in frequency and persisting for longer than twenty-four hours. The diarrheas were classified as specific, parenteral and unknown. The outcome was considered good if complete recovery had taken place by the end of a week. Forty-nine of the eighty control patients and fifty-four of the treated group were less than 1 year of age. In the control group recovery was good among seventeen parenteral, sixteen unknown and twenty specific diarrheas; the respective poor recoveries were five, eight and eleven. Among the banana diet group of patients thirteen with parenteral, thirty with unknown and twenty with specific diarrheas had good recoveries, while five, eleven and fourteen had poor recoveries. There were three deaths among the control and four among the banana diet group of children. There were no significant differences within the two groups as regards age, etiologic factors, severity of infections, state of nutrition and mortality rates. Banana feeding was as effective as the older and more usual feeding regimens. It was well taken and the patients receiving it were usually relieved of hunger, tenesmus and abdominal discomfort and passed semiformal stools.

American Journal of Surgery, New York

49:201-400 (Aug.) 1940. Partial Index

Cervical Spine Trauma Associated with Injury of Head and Shoulder Girdle: Coleman's Syndrome. J. M. Meredith, University, Va., and E. Grantham, Louisville, Ky.—p. 203.

Secondary Osteo-Arthritis Following Fractures of Ankle. R. W. Lewis and W. C. Graham, New York.—p. 210.

Tumors Related to Cartilaginous Growth. H. L. Lloyd, Brownsville, Texas.—p. 221.

Complications of Empyema in Children. C. W. Lester, New York.—p. 227.

*Evaluation of Sorbitol as Dehydrating Agent. J. Browder, Brooklyn, and F. H. Bragdon, Pittsburgh.—p. 234.

*Mesenteric Venous Occlusion: Clinical Entity. M. J. Brown, Davenport, Iowa.—p. 242.

Reducing Mortality of Perforated Appendicitis: Study of 100 Cases. A. S. Jackson and R. Perkins, Madison, Wis.—p. 250.

Spontaneous Reduction of Acute Intussusception in Children: Its Incidence and Significance in Diagnosis and Treatment of Recurrent Intussusception. L. Goldman and R. Elman, St. Louis.—p. 259.

Postoperative Concentration of Bile Salts in Human Bile. C. H. Greene, R. Hotz, R. F. Carter and J. R. Twiss, New York.—p. 264.

When to Operate and Why, and What Operation to Do in Acute Cholecystitis. R. S. Fowler, Brooklyn.—p. 281.

Ovarian Neoplasms: Their Pathologic and Surgical Significance. V. S. Counsellor, Rochester, Minn.—p. 284.

Hysterostomy: Dührssen's Incision: Preliminary Study. I. A. Siegel, Baltimore.—p. 290.

Consideration of Suture Problem. J. Burke, Buffalo.—p. 303.

Recurrence in Segmental Enteritis Following Radical Resection. L. Felger and H. L. Schenk, Los Angeles.—p. 307.

Treatment of Fractured Clavicle in Presence of Kyphosis by Modified Clavicular Cross. G. V. Webster, San Francisco.—p. 316.

Ammonia as Cell Proliferant and Its Spontaneous Production from Urea by Enzyme Urease. W. Robinson, Washington, D. C.—p. 319.

Valves and Anastomoses of Hemorrhoidal and Related Veins. T. F. Reuther, Chicago.—p. 326.

Polycystic Kidney Disease. H. Hausman, New York.—p. 335.

Sorbitol as Dehydrating Agent.—According to Browder and Bragdon, sorbitol, a modified monosaccharide ($C_6H_{14}O_6$) derived from the reduction of dextrose and levulose, may be employed as an osmotic dehydrating agent and diuretic. The

authors investigated its effect on the cerebrospinal fluid pressure, pulse, respiration, blood pressure and psychologic state in persons with and without disease of the central nervous system. Thirty-three patients with various diseases of the intracranial structures were studied, with five patients as controls who had neither clinical evidence of a pathologic process implicating the nervous system nor increase in the intracranial tension as measured by the cerebrospinal fluid pressure. A total of fifty intravenous injections of sorbitol was given to thirty-eight patients. Clinical improvement as evidenced by a more lucid state of consciousness and relief of headache was noted in 54 per cent. Detailed observations concerning the cerebrospinal fluid pressure, pulse, blood pressure, respirations and psychologic state were recorded in ten experiments. Included in the detailed studies were two patients without evidence of disease of the central nervous system. In each experiment on the two subjects a slight reduction in cerebrospinal fluid pressure was effected and sustained for more than two hours. In four of the five patients in whom an elevation in cerebrospinal fluid tension was demonstrated, the injection of sorbitol produced an immediate reduction in the pressure followed by a secondary rise to a level higher than that observed prior to the injection. In a patient who had sustained a recent craniocerebral trauma there was an immediate progressive rise in cerebrospinal fluid pressure to twice the original level following the injection. The authors conclude that in general the action of sorbitol as measured by the reduction in cerebrospinal fluid pressure is comparable to dextrose but less satisfactory than sucrose. The frequent occurrence of chills following the intravenous injection of this chemical militates against its use as a dehydrating agent.

Mesenteric Venous Occlusion.—According to Brown the literature contains reports of 772 cases of mesenteric vascular occlusion, most of them arterial occlusion. The author believes that venous occlusion is a separate clinical entity. This study was made in 101 cases of venous occlusion taken from the literature, two from the Guthrie Clinic and one from the author's practice. Seventy-one of the 104 had a fatal outcome. Of the patients who recovered, 57.5 per cent had been ill for nearly two weeks before operation. This does not support the calculations of Warren and Eberhard that the mortality rate increases from 25 per cent in the first twelve hours to 83.3 per cent after four days. An investigation on the relationship of the extent of the involved mesentery and intestine to the outcome of the disorder revealed that the average length of the bowel involved in twenty-two of thirty-three patients who recovered was 38 $\frac{1}{2}$ inches. Of thirty-seven patients who died, an average of 102 $\frac{1}{2}$ inches of the intestine was infarcted. It is generally conceded that symptoms of arterial occlusion are fulminating and those of the venous type are less so. The onset of pain may be rapid or slow. It may be colicky. The contrast between the severity and persistence of the pain and the paucity of physical observations was the most significant diagnostic feature of mesenteric venous occlusion. Vomiting is more frequent in the arterial than in the venous lesion. Constipation is considered more common than diarrhea. Distention is regarded by most observers as a late manifestation and is not relieved by bowel movement or enemas. Shock is considerable in fulminating cases and is proportional to the degree of mesenteric involvement. The temperature at the onset is either normal or subnormal but within a few hours may rise to 103 F. The pulse rate may be slow at the onset but varies with the temperature and degree of shock. Patients with a rapid onset and severe pain will show varying degrees of pallor, but patients with venous thrombosis and a slow insidious onset may show no complexion changes until the occlusion becomes complete and the epigastric pain severe. Tenderness is much less than would be expected in proportion to the pain and extent of the lesion. There is a general abdominal tenderness without localization, especially in the venous cases, until the occlusion becomes complete. The tenderness in the advanced cases tends to be epigastric. Rigidity is generally lacking in the early cases, but as the lesion advances it becomes more definite. Peristaltic sounds are not likely to be so loud and gurgling as in cases of mechanical obstruction, but, when the entire small bowel is affected by the thrombotic process, absence of peristaltic sounds is the rule and distention is more likely to occur. There may be no evidence of gross blood in

the stools but laboratory tests would undoubtedly show its presence more often than is reported. At the onset the white blood count may be normal, but as the lesion progresses leukocytosis is the rule. X-ray examination of the abdomen can be expected to show evidence of intestinal obstruction in a large percentage of cases. Although enterostomy has been advocated by some, most writers agree that primary resection of the involved portion of the intestine is preferable. It has been pointed out that resection of from 3 to 6 inches on either side of the area of infarction is necessary to prevent extension of thrombosis. In cases due to overindulgence in alcohol, resection may not be necessary to effect a cure. In cases in which thrombosis results from infection such as appendicitis, Jones advocates the Wilms-Braun operation of ligation of the ileocecal vein to prevent the extension of thrombosis. The author reports histories of three typical cases.

Archives of Dermatology and Syphilology, Chicago 42:239-398 (Aug.) 1940

- Massive Arsenotherapy in Early Syphilis by Continuous Intravenous Drip Method: Preliminary Work with Neosarsphenamine. G. Baehr, New York.—p. 239.
Id.: Technic. W. Leifer, New York.—p. 245.
Id.: Toxicologic Manifestations. L. Chargin, New York.—p. 248.
Id.: Clinical Considerations. H. T. Hyman, New York.—p. 253.
Id.: Résumé of Serologic Observations. J. F. Mahoney, Staten Island, N. Y.—p. 262.
Id.: Follow-Up Observations at New York Hospital. B. Webster, New York.—p. 264.
Id.: Follow-Up Observations at Bellevue Hospital. E. Thomas, New York.—p. 267.
Id.: Arsenic Excretion in Urine and Concentration in Blood. H. Sobotka, W. Mann and Edith Feldbau, New York.—p. 270.
Id.: Public Health Aspects. J. L. Rice, New York.—p. 283.
Effect of Ointment Bases on Skin: I. Results of Patch Tests with Commonly Used Ointment Bases. L. F. Ray, Portland, Ore., and I. H. Blank, Boston.—p. 285.
Experiments in Poison Ivy Sensitivity: Effects of Specific Injections on Level of Sensitivity to Quantitative Patch Tests and on Clinical Susceptibility. S. Greenberg and Ella D. Mallozzi, New York.—p. 290.
Verruca Plantaris. E. A. Oliver, Chicago.—p. 302.
Gentian Violet in Sabouraud's Medium for Isolation of Pathogenic Fungi. S. S. Epstein and F. D. Snell, Brooklyn.—p. 308.
Acute Interstitial Myocarditis Following Administration of Arsphenamines. C. E. Brown and D. H. McNamara, Santa Barbara, Calif.—p. 312.
Exudative Chronic Discoid and Lichenoid Dermatitis (Sulzberger and Garbe): Treatment of Five Patients. Frances Pascher, Brooklyn.—p. 322.
Injuries of Mouth Caused by Teeth. D. W. Montgomery, San Francisco.—p. 333.
Neurofibromatosis Associated with Carcinoma of Breast and Pregnancy. H. Charache, Brooklyn.—p. 337.

Canadian Medical Association Journal, Montreal 43:1-98 (July) 1940

- Therapeutic Value of Adrenal Cortical Hormones in Traumatic Shock and Allied Conditions. H. Seije, Christianne Dosne, Lucy Bassett and Joan Whittaker, Montreal.—p. 1.
Reduction of Mortality from Experimental Traumatic Shock with Adrenal Cortical Substances. P. G. Weil, B. Rose and J. S. L. Browne, Montreal.—p. 8.
Boeck's Disease (Sarcoid): Its Clinical Groups and Diagnosis. J. H. Palmer, Montreal.—p. 11.
Weil's Disease (Report of Fatal Case with Autopsy). A. J. Blanchard and C. H. Jaimet, Toronto.—p. 19.
Acromioclavicular Dislocation. A. A. Appell, Toronto.—p. 23.
Congenital Abnormalities of External Ear. H. O. Foucar, London, Ont.—p. 26.
Technic for Pneumo-Encephalography. H. H. Hephurn, Edmonton, Alta.—p. 28.
Two Fractures of Neck of Femur. J. H. Couch, Toronto.—p. 31.
Gallbladder Surgery. F. B. Gurd, Montreal.—p. 34.
Maternal Mortality. W. G. Cosbie, Toronto.—p. 38.
*Diphtheria Immunization. E. M. Worden, Montreal.—p. 44.
Alcohol and Automobile Driving. A. T. Cameron, Winnipeg, Man.—p. 46.
The Psychoneuroses of War. G. F. Boyer, Toronto.—p. 53.
Perisymphatic Injection Treatment of Asthma. H. M. Wilensky, London, Ont.—p. 59.
Cesarean Section. N. Shaul, Toronto.—p. 63.

Diphtheria Immunization.—Worden points out that at the Alexandra Hospital for infectious diseases in Montreal it has been the routine to record on admission whether that patient had or had not been immunized to diphtheria. The 9,295 admissions to the hospital from 1932 to 1938 inclusive were studied with reference to diphtheria immunization. The patients were suffering from scarlet fever, measles, diphtheria, whooping cough, parotitis, chickenpox and erysipelas. Of all the patients less

than 12 years of age who made up 80 per cent of the admissions admitted in 1932, 16.9 per cent had been immunized. This figure rose to 53.5 per cent in 1938. In 1938 only 9 per cent of all children less than 1 year of age and only 25 per cent of those less than 2 years of age had been immunized. In Montreal in 1933 there were 297 cases of diphtheria with eighteen deaths and in 1938 there were 227 cases and twenty-six deaths. Immunization of infants at the age of 6 months should be particularly encouraged and this should be followed by a further dose of toxoid at about 5 years of age. Diphtheria does occur among patients who have had a full immunization course. There have been four such cases at the Alexandra Hospital during the last three years. These cases probably fall into that group of children who after three or four years require "reimmunization" with a single dose of toxoid (from 0.25 to 1 cc.).

Connecticut State Medical Journal, Hartford

4:437-500 (Aug.) 1940

- Allergy in General Practice. J. S. Harris, New Haven.—p. 437.
The Connecticut Way: The State Medical Society's Participation in Public Health. J. I. Linde, New Haven.—p. 443.
That Secondary Adenoid and Tonsil Operation. W. H. Turnley, Stamford.—p. 447.
Unusual Case of Pancreatic Abscess. P. J. Steincrohn, Hartford.—p. 450.

Indiana State Medical Assn. Journal, Indianapolis

33:397-440 (Aug.) 1940

- Modern Trends in Therapeutics. R. A. Solomon, Indianapolis.—p. 397.
Management of Complicated Thyroid Disease. G. Link, Indianapolis.—p. 402.
Endemic Asthma Due to Soy Bean Dust. S. S. Rubin, Gary.—p. 406.
Hemorrhage During Pregnancy. C. P. Huber, Indianapolis.—p. 408.
Nasal Surgery, the Internist and the Patient. J. J. Littell, Indianapolis.—p. 412.
Calcification of Pericardium. P. D. Crimm, J. D. McDonald and H. N. Cookson, Evansville.—p. 415.
Supervision of Normal Infant by the Family Physician. H. E. Miller, Seymour.—p. 419.
Gallbladder Disease. G. A. May, Madison.—p. 421.

Journal of Bone and Joint Surgery, Boston

22:525-894 (July) 1940. Partial Index

- Fractures of Neck of Femur in Childhood. J. C. Wilson, Los Angeles.—p. 531.
Congenital Flatfoot: New Surgical Approach. J. W. White, Greenville, S. C.—p. 547.
Tuberculosis of Large Long Bones of Extremities. W. B. Carrell, Dallas, Texas, and H. M. Childress, Jamestown, N. Y.—p. 569.
Operative Procedure for Treatment of Hammer Toe and Claw Toe. R. G. Taylor, Sheffield, England.—p. 608.
Pseudofractures: Manifestation of Nonsuppurative Osteomyelitis. J. B. Weaver and C. B. Francisco, Kansas City, Mo.—p. 610.
Method of Fixation for Fracture of Clavicle. G. Murray, Toronto.—p. 616.
"Dorsal Bunion": Its Mechanics and Operative Correction. P. W. Lapidus, New York.—p. 627.
Osteoid Osteoma: Further Experience with This Benign Tumor of Bone, with Special Reference to Cases Showing Lesion in Relation to Shaft Cortices and Commonly Misclassified as Instances of Sclerosing Nonsuppurative Osteomyelitis or Cortical Bone Abscess. H. L. Jaffe and L. Lichtenstein, New York.—p. 645.
Herniation of Intervertebral Disk with Referred Sciatic Symptoms: Study of Forty Cases. H. F. Johnson, Omaha.—p. 708.
Surgical Treatment of Degenerative Arthritis of Knee Joint. G. E. Haggart, Boston.—p. 717.
Interposition of Sesamoids in Metacarpophalangeal Dislocations. P. D. Nutter, Detroit.—p. 730.
Spontaneous Hemarthrosis Due to Synovial Granuloma. J. K. Stack, Chicago.—p. 735.
Orthopedic Research in North America: Survey of the Research Committee of the American Orthopedic Association. J. S. Barr, Boston; P. C. Colonna, Oklahoma City, and A. R. Shands Jr., Wilmington, Del.—p. 752.

Osteoid Osteoma.—Jaffe stated in 1935 that osteoid osteoma began its development in the spongy bone. Jaffe and Lichtenstein show that it can originate also, if not within the substance of bone cortex, at least on its periosteal or medullary surface. Their present thirty-three cases include thirteen instances in which the lesion developed in the shaft cortex of a long bone. These lesions, like those in spongy osseous areas, were misinterpreted as instances of chronic osteomyelitis or of osseous abscess. More particularly the cases in which the lesion was in the shaft cortex had been misclassified as representing so-called "sclerosing nonsuppurative osteomyelitis" or else "intracortical bone

abscess." The authors interpret this lesion anatomically as a benign osseous neoplasm. They believe that a great many cases which in the past have been interpreted as osteomyelitis with annular sequestrum, chronic bone abscess, osteomyelitis with cortical osseous abscess, sclerosing nonsuppurative osteomyelitis, osteomyelitis chronic from the beginning and the like actually belong in the category of osteoid osteoma. That is, they have as their common anatomic basis a distinctive benign osteoid and bone-forming tumor of slow and limited growth which in the course of its development may provoke reactive perifocal new bone formation, sometimes of considerable extent. Much of the misunderstanding of the condition has resulted from concentrating attention on this perifocal reaction instead of on the lesion proper. Unless the latter is removed (preferably intact in its bed of bone) and submitted for microscopic study, the true significance of the case may be missed, as it usually is. The osteoid osteoma proper is usually indicated roentgenographically by a relatively radiolucent or rarefied area or, if it has become substantially ossified, it may appear as a relatively radiopaque nidus. In the cortex of a long bone it may be difficult to distinguish the shadow of the osteoid osteoma if the reactive cortical thickening is considerable or if the lesion has become ossified, as its shadow may be dominated by that of the thickened cortex. Because the roentgenogram has these two aspects, cases are incorrectly labeled. The disorder has a predilection for adolescents and young adults, principally from 10 to 25 years of age. The presenting symptom is localized pain of at least several months' duration. Surgical excision of osteoid osteoma with some of the surrounding bone resulted in clinical cure with prompt and often dramatic relief of distressing pain. During their experience of seven years they have encountered no recurrences.

Journal of Experimental Medicine, New York

72:99-216 (Aug.) 1940

- Propagation of Vaccinia Virus in Rabbit Fetus. F. W. Gallagher and O. C. Woolpert, Columbus, Ohio.—p. 99.
Transmissible Agent (Theiler's Virus) in Intestines of Normal Mice. P. K. Olitsky, New York.—p. 113.
Infectious Myxomatosis of Rabbits: II. Demonstration of Second Soluble Antigen Associated with the Disease. J. E. Smadel, S. M. Ward and T. M. Rivers, New York.—p. 129.
Constituents of Elementary Bodies of Vaccinia: II. Properties of Nucleic Acid Obtained from Vaccine Virus. C. L. Hoagland, G. I. Lavin, J. E. Smadel and T. M. Rivers, New York.—p. 139.
Renal Clearance of Hemoglobin in Dog. J. V. Monke and C. L. Yuile, Rochester, N. Y.—p. 149.
Primary Pulmonary Coccidioidomycosis: Experimental Infection with *Coccidioides Immitis*. A. E. Cronkite and A. R. Lack, San Francisco.—p. 167.
Identity of "Inhibitor" and Antibody in Extracts of Virus-Induced Rabbit Papillomas. W. F. Friedewald, New York.—p. 175.
Liberation of Renin by Perfusion of Kidneys Following Reduction of Pulse Pressure. K. G. Kohlstaedt and I. H. Page, Indianapolis.—p. 201.

Journal-Lancet, Minneapolis

60:339-378 (Aug.) 1940

- The Problem of Diabetes. W. G. Richards, Billings, Mont.—p. 355.
The Physician and the Public Health Program. G. W. Anderson, Minneapolis.—p. 360.
Decompression of Obstructed Intestine by Manipulation Under Ether and Pentobarbital Sodium Anesthesia: Experimental Study. L. Sperling and A. Kremen, Minneapolis.—p. 365.
Ovarian Hemorrhage as Cause for Acute Abdominal Symptoms. C. O. Rice, Minneapolis.—p. 369.
The Physical Education Teacher's Responsibility for Health Instruction. Mabel E. Rugen, Ann Arbor, Mich.—p. 371.

Journal of Nervous and Mental Disease, New York

92:141-280 (Aug.) 1940

- Extrapyramidal Function. F. A. Mettler, Augusta, Ga.—p. 141.
Left-Sided Weakness, Blood Pressure Difference Between Two Arms and Left Optic Atrophy: New Clinical Syndrome? F. E. Weatherby and N. H. Wiley, El Paso, Texas.—p. 151.
Prolonged Coma After Insulin Hypoglycemia: Clinical Features and Treatment. D. Goldman, Cincinnati.—p. 157.
VII. Speech Studies in Cretins: Speech Sounds. S. L. Schreiber, I. P. Bronstein and A. W. Brown, Chicago.—p. 169.
Insulin Therapy in Schizophrenia and Reticulo-Endothelial System. G. M. Davidson, Ward's Island, N. Y.—p. 193.
Artificial Fever Therapy in Multiple Sclerosis: Study of Fifty-One Cases. A. E. Bennett and M. D. Lewis, Omaha.—p. 202.

Journal of Urology, Baltimore

44:125-246 (Aug.) 1940

- *Pyelonephritic Injuries to Kidney and Their Relation to Hypertension. E. G. Crabtree, Boston.—p. 125.
- Epithelial Tumors of Bladder. J. E. Ash, Washington, D. C.—p. 135.
- Prostatic Calculi: Treatment by Subtotal Perineal Prostatectomy. R. B. Henline, New York.—p. 146.
- Carcinoma of Prostate: Comparative Study of Modes of Treatment. R. W. Barnes, Los Angeles.—p. 169.
- Prostatic Obstruction in Negroes. E. Burns, New Orleans.—p. 177.
- *Prophylaxis and Medical Management of Calcium Urolithiasis: Role of Quantity and Precipitability of Urinary Calcium. R. H. Flocks, Iowa City.—p. 183.
- Treatment of Resistant Infection in Urinary Tract. E. N. Cook, Rochester, Minn.—p. 191.
- Papillary Cystadenoma of Kidney: Report. N. J. Heckel and H. V. Gould, Chicago.—p. 200.
- Etiology of Multilocular Cysts of Kidney. A. B. Hepler, Seattle.—p. 206.
- Anomalous Relationship Between Ureter and External Iliac Artery. J. E. Dees, Durham, N. C.—p. 207.
- Supervoltage Radiation in Treatment of Bladder Tumors. F. H. Colby, Boston.—p. 216.
- Uretero-Intestinal Implantation: Preliminary Report. H. J. Jewett, Baltimore.—p. 223.
- Benign Cystadenoma of Bladder: Probably of Urachal Origin. F. C. Hamm, Brooklyn.—p. 227.
- Subserial Examination of Endoscopically Resected Prostatic Tissue for Latent Carcinoma. S. E. Kramer and J. S. Ritter, New York.—p. 234.
- Congenital Absence of Testis: Report of Seven Cases of Monorchidism. V. S. Counsellor, D. R. Nichols and H. L. Smith, Rochester, Minn.—p. 237.
- Observations on Site of Action of Sulfapyridine in Gonorrhea. R. M. Nesbit, Ann Arbor, Mich.—p. 242.

Pyelonephritis and Hypertension.—According to Crabtree, the demonstration that in about one half of the patients who die of hypertension pyelonephritic changes are found at necropsy, the clarification (through animal research) of the problem of deleterious effects of injured renal tissue in producing hypertension through some blood-borne substance that is elaborated by the diseased kidney and the recent recognition of an improvement in blood pressure following nephrectomy for chronic renal infectious disease have stimulated the study of renal deficiency and hypertension. The immediate result has been a rush to apply the new information with the danger that renal tissue that can ill be spared may be sacrificed. Aside from the clinical cases whose final fate is not yet known, evidence to support destruction of a portion of the renal tissue of a hypertensive patient is based only on animal experimentation and necropsy. The entire history of pyelonephritis has not yet been adequately covered by clinical surveys to indicate what have been the health conditions and the duration of life of affected patients. The author agrees with those observers who consider pyelonephritis a progressive disease of slow development, the end result of which is not apparent for many years, and that the apparent recovery from the acute phase of the disease is misleading. Blood pressure readings for thirty cases of severe pregnancy pyelonephritis from ten to eighteen years between the infection and the survey reveal that: 1. Seven cases which were intensively studied showed severe degrees of renal damage, as indicated by intravenous phenolsulfonphthalein excretion, intravenous pyelography, urea clearance-concentration and dilution tests, and nonprotein nitrogen determinations. 2. Only two of the thirty patients showed hypertension. One of them, who had a normal blood pressure at the time of the study, has since shown hypertension after a summer of athletic activity. 3. Hypertensive tendencies among the seven patients intensively studied were not in proportion to the degree of renal deficiency demonstrated at the stage of the natural history of pyelonephritis at which the study was made. 4. Hypertension is not the rule in severely injured pregnancy kidneys after a lapse of ten or more years from the initial injury of patients who show reasonable degrees of health. This does not imply that these patients may not be hypertensive at some later date. A study of forty-five patients examined from five to ten years after the initial injury (the pregnancy infection) revealed that: 1. Many of the patients showed evidences of renal damage, even though no pus, albumin or infection was present. 2. There are evidences of renal damage following the initial infection in all types of patients. There may have been a slight preponderance of such damage in the severe group. In a few cases labeled mild, the renal damage was most severe. 3. Of three patients whose pyelo-

nephritis was complicated by toxemia two were dead at five years and the other showed marked evidence of renal deficiency with hypertension. 4. Nonprotein nitrogen readings were elevated only among the toxic patients. 5. The excretion of intravenously administered phenolsulfonphthalein showed that excretion was delayed in the second and third fifteen minute intervals. The result was flattening of the normal curve. The first fifteen minute output was usually below 25 per cent. Total excretion for an hour was usually normal. 6. The ability to concentrate the urine was subnormal for the group. The urine of only seven patients could be concentrated to 1,025. 7. All patients with pyelonephritis who had toxemia and six without complications showed hypertension at the time of the examination. 8. Five of the forty-five patients had renal stones. 9. In four instances there was such poor filling of the pelvis and ureters that intravenous urography did not demonstrate the condition of the tract. One or both kidneys of five patients showed irregularity of the calices suggestive of contracture of the cortex. Inflammatory changes in the pelvis and ureters were common. 10. Total renal deficiency was present in seven of the eleven cases studied.

Prophylaxis and Medical Management of Calcium Urolithiasis.—Flocks states that previous work emphasized the importance and significance of the role of urinary calcium in the pathogenesis of calcium urolithiasis and indicated that the latter condition was to be modified depending on the urinary calcium. It was shown that the normal daily urinary calcium is approximately from 90 to 150 mg. on a neutral ash diet which is low in calcium and phosphorus. Marked increase in the intake of calcium and phosphorus raises the urinary calcium to from 300 to 350 mg. daily. Acid ash diets or increased vitamin D intake bring about only slight rises in the urinary calcium of the normal individual. However, certain changes in the body mechanism (body immobilization, the early stages of certain bone conditions, hyperthyroidism, hyperparathyroidism and early intrinsic renal changes) are associated with increased urinary calcium excretion. There is a large group of individuals in whom the exact cause of high urinary calcium excretion is undetermined. These individuals make up approximately 60 per cent of patients with calcium stones. Marked intrinsic renal damage, the later stages of certain bone diseases and hypoparathyroidism present low urinary calcium excretions. On the basis of studies on the quantitative variations in urinary calcium excretion and the finding that large fluid intake lowered the urinary calcium concentration without significantly altering the daily urinary calcium excretion, regimens for the prophylaxis and medical management of calcium urolithiasis were outlined. They depended on (1) ruling out and treating all other factors present, (2) determining the urinary calcium excretion, (3) if the urinary calcium was high, searching for and removing the cause if possible; forcing fluids to lower urinary calcium concentration, giving relatively low calcium and phosphorus intake, using acid ash diets and vitamin D intake with caution since increased urinary calcium resulting from their use counteracts the beneficial actions of lowered urinary pH , avoiding urinary tract infection and when the urinary calcium returns to a normal or low value getting rid of any stone nuclei which may have been formed by placing the patient on a special regimen and (4) if the urinary calcium is low or normal forcing fluids to lower the urinary calcium concentration and using an acid ash diet and acidifying drugs if lowering of the urinary pH is obtained. The author felt that a more thorough knowledge of the effect of treatment on the urinary calcium precipitability was necessary before more satisfactory results could be obtained and reasons for failures ascertained. The amount of calcium salts that will precipitate from any given sample of urine will vary according to many factors, but it can be determined rather roughly by the following method: One hundred cc. of freshly voided urine is divided into two portions after the pH has been determined. In one the concentration of calcium is obtained and the other is thoroughly mixed with 1 Gm. of finely divided calcium phosphate for ten minutes, filtered and the calcium concentration obtained. The two concentrations are then compared. The urinary calcium precipitability is then expressed as minus the milligrams of calcium which will precipitate from the urine when it is mixed with calcium

phosphate. A minus value indicates that calcium will precipitate from the urine and a positive value that calcium phosphate will dissolve in the urine under these conditions. Studies of this type have been carried out on nineteen normal individuals and five patients with renal stone. The urine of the normal individual under normal conditions has shown a precipitability of from minus 2 to 8. When the calcium intake has been lowered and the urine concentrated this has been changed to a plus 1 to 3. In contrast the precipitability values of a patient with many stones were from minus 11 to 16. Dilution lowered the precipitability but never changed it to a plus quantity. Thus far the method has proved valuable in evaluating the significance of urinary calcium precipitability in calcium urolithiasis and in studying and following the effects of therapy.

Laryngoscope, St. Louis

50:585-702 (July) 1940

- Vitamins and the Ear, Nose and Throat. I. H. Jones, Los Angeles.—p. 585.
Pathologic Changes in Peripheral Auditory Mechanism Due to Avitaminoses (A, B Complex, C, D and E). W. P. Covell, San Francisco.—p. 632.
Vitamin B and Other Measures in Treatment of Deafness. J. H. Childrey, San Francisco.—p. 648.
Recognition, Treatment and Prevention of Hearing Impairment in Children. S. J. Crowe, Baltimore.—p. 658.
Irradiation Treatment of Hyperplastic Lymphoid Tissue. C. F. Burnam, Baltimore.—p. 663.
Histologic Studies of Eustachian Tube of Individuals with Good Hearing. L. Polvogt and D. C. Babb, Baltimore.—p. 671.
Applied Biochemistry in Etiology and Treatment of Seasonal Hay Fever. D. C. Jarvis, Barre, Vt.—p. 676.

Maine Medical Association Journal, Portland

31:213-234 (Aug.) 1940

- Surgical Treatment of Varicose Veins. J. M. Parker, Portland.—p. 213.
Attendant Nurses. A. Worcester, Boston.—p. 218.
Geriatrics in Country Practice. A. J. Fuller, Pemaquid.—p. 222.

Michigan State Medical Society Journal, Lansing

39:533-612 (Aug.) 1940

- Skin Disease on Hands. C. G. Lane, Boston.—p. 549.
*Erysipelas: Sulfanilamide Treatment. F. H. Top, D. C. Young and H. T. Mernaugh, Detroit.—p. 557.
Neoprontosil in Treatment of Acute Upper Respiratory Infections. R. M. Atchison, Northville.—p. 560.
Sodium Morrhuate: Severe Reaction to Injection. M. Kadin, Calumet.—p. 561.

Erysipelas: Sulfanilamide Treatment.—Beginning with May 1937 and extending to April 1, 1939, Top and his associates treated cases of erysipelas admitted to their hospital with sulfanilamide. They compare these with cases treated with antitoxin during a period of about the same length just prior to May 1937. The number of patients treated with antitoxin was seventy-six and the number treated with sulfanilamide was 135. They observed that the proportion of cases that showed no spread was twice as great among those treated with sulfanilamide as among those given antitoxin. The proportion of cases with slight spread was about the same for the two groups, but moderate spread was noted twice as frequently among the antitoxin treated as among the sulfanilamide treated. Marked spread was noted among 10.5 per cent of antitoxin treated, whereas none of the patients receiving sulfanilamide showed this degree of extension. A marked difference was noted in the number of febrile days following institution of treatment with antitoxin or sulfanilamide. The average number was 6.1 days for the former compared to 2.6 days for the latter. The number of days in the hospital for the antitoxin treated group was 14.3 days and for the sulfanilamide treated group 7.5 days. This difference is a distinct advantage to the patient and his purse. In a hospital where a vast majority of patients are indigent or semi-indigent, the saving in the cost of hospitalization to the city is tremendous. The proportion of complications occurring in the antitoxin treated cases was 21.1, compared to 11.3 in the sulfanilamide treated group. If two accidental deaths were removed from the sulfanilamide group, the fatality rates for the antitoxin and sulfanilamide groups would be about the same. It is remarkable that no infant has died since sulfanilamide has replaced antitoxin. The dose of sulfanilamide used in the

treatment of erysipelas is comparatively small. About one half to three fourths of a grain of sulfanilamide per pound of body weight daily is administered for a period of from four to six days. This amount rarely gives a blood sulfanilamide level exceeding 5 mg. per hundred cubic centimeters. A large initial dose consisting of one third of the daily dose may be given at four hour intervals day and night. Infants demand slightly higher amounts per unit of body weight. Elderly persons must be carefully watched because kidney elimination may be impaired. The blood picture should be closely followed and a complete blood count should be made every other day. The authors conclude that the use of sulfanilamide has proved of distinct value in the treatment of erysipelas.

Military Surgeon, Washington, D. C.

87:89-196 (Aug.) 1940

- Foundation of American Meteorology by the United States Army Medical Department. E. E. Hume.—p. 89.
Modern Treatment of Syphilis. A. J. Greco.—p. 119.
A Medical Observer with the French. E. Ortion.—p. 126.
First Aid versus Subsequent Treatment. W. W. Lasher.—p. 129.
Suggested Changes in Preparation and Distribution of Medical Records. N. W. White.—p. 133.
*Transportation of the Wounded by Plane. F. Schmidt.—p. 136.
Transition of Civilian Dentist to Dental Officer. R. W. Force.—p. 141.
Medicine of the Future. H. Plesants Jr.—p. 144.
Short Wave Diathermy. F. H. Krusen.—p. 158.
Experience with Medical Service During First Army Maneuvers of 1939. J. L. Kantor.—p. 163.
Dental Surgeon with Combat Troops. J. H. Jaffer.—p. 171.
Surgeon LaFayette Guild, Medical Director of the Army of Northern Virginia. J. M. Phalen.—p. 174.

Transportation of the Wounded by Plane.—According to Schmidt, German ambulance planes have been put into operation in appreciable number on the Eastern Front. The traveling speed of the large medical planes is 230 kilometers an hour. In contradistinction to all land transportation the plane maintains its speed without interruptions from takeoff to landing. Airplane transportation is superior to all other methods, because, while flying, jarring of the patient rarely causes pain and the transportation time is short. If taking the wounded to and from the flying field could be disregarded, the limits to the possibilities for air transportation could be widened even further than was actually the case in Poland. The trimotor passenger plane as an ambulance plane must be considered a lucky choice. Four removable stretcher racks in the open space in the cabin carried eight stretchers. The racks are fastened rigidly to the wall of the plane and permit no motion in any direction, except for elasticity. No necessity for springs has been felt either in squalls while in flight or when landing. Short leather straps keep the stretchers from slipping. Lying in pairs, one beside or above the other, each patient is easily reached from the central aisle. There is enough room to change a bandage while in flight, observe the patient's face, pass refreshments or give injections. The attending physician finds a good supply of syringes and cardiac and sedative preparations, also a dressing kit, sterile gauze, splints and padding material. The relatively large number of spinal injuries has made it necessary to include rubber or glass bedpans. They are now standard ambulance equipment. Since the wounded are very susceptible to cold, the planes are equipped with cabin heat of the same type used in passenger planes. Combining several airplanes in one medical unit was found expedient. The greatest difficulty of airplane transportation is that the ambulance plane requires suitable landing and takeoff fields and is dependent on land means of transportation. At the flying fields much time was wasted with waiting and loading after the plane had landed. Such delays are avoidable if the probable time of landing is reported in advance to those at the front. For carrying communications in the area between the rear of the front section and temporary air stations for large planes, a small scout plane would be most adequate. Such a plane could restore broken connections in the shortest time, receive new orders, pick out the most suitable open fields in the closest proximity to the wounded and in cases of emergency, if the plane is adapted to it, could pick up one or two severely wounded. The author asserts that not a single wounded man transported by himself in a reclining position has ever suffered airsickness, notwithstanding squalls during several flights. The reason for this lies mainly in the fact of the reclining position of the body, the short duration of the trip and

the avoidance of marked turbulent air currents in the proximity of the ground up to 400 meters. Wounded soldiers have felt very grateful for the airplane transportation. Many soldiers looked on transport of 400 kilometers, to their home base in two hours, as incredible. Great elation was felt over this type of care of the wounded and even among those left behind it created the feeling that everything possible was being done even for the common soldier. The morale of the soldiers is thereby maintained.

Minnesota Medicine, St. Paul

23:533-608 (Aug.) 1940

- Present Trends in Study of Arthritis and Rheumatism. R. L. Cecil, New York.—p. 533.
Clinical Aspects of Vitamin B Deficiencies. N. Jolliffe, New York.—p. 542.
Recent Advances in Treatment of Hepatic Disease. A. M. Snell, Rochester.—p. 551.
Preliminary Survey of Anopheline Mosquito Fauna of Southeastern Minnesota and Adjacent Wisconsin Areas. R. H. Daggy, O. J. Muegge and W. A. Riley, St. Paul.—p. 556.
Schizophrenia in Childhood. R. C. Gray, Minneapolis.—p. 565.
Erythroblastosis (Icterus Gravis) in Newborn: Report of Family of Three Children. J. M. Adams and R. F. Cochrane, Minneapolis.—p. 569.
Sulfamido Compounds: Their Practical Applications in Clinical Medicine. A. E. Brown, Rochester.—p. 572.

Nebraska State Medical Journal, Lincoln

25:285-320 (Aug.) 1940

- The Person Who Is Sick. H. D. Singer, Chicago.—p. 285.
Prevention of Contagious Diseases in Children. F. Clarke, Omaha.—p. 290.
Injection of Gonadotropic Hormone in Treatment of Undescended Testes. G. W. Ainlay, Fairbury.—p. 292.
Complications of Shoulder Injuries and Their Treatment. H. F. Johnson, Omaha.—p. 295.
Highly Malignant Tumors of Nasopharynx. S. Z. Faier, Omaha.—p. 297.
Management of Acute Infections of Hand. J. E. Courtney, Omaha.—p. 299.
Diagnosis and Treatment of Anemias. J. C. Sharpe, J. S. Latta, G. E. Robertson, L. S. McGoogan, A. S. Rubnitz and W. Thompson, Omaha.—p. 302.

New England Journal of Medicine, Boston

223:165-204 (Aug. 1) 1940

- *Renal Factor in Continued Arterial Hypertension Not Due to Glomerulonephritis, as Revealed by Intravenous Pyelography: Study of 212 Cases, with Report of Results of Nephrectomy in Nine Cases. R. S. Palmer, R. Chute, N. L. Crone and B. Castleman, Boston.—p. 165.
Neurogenic Dysfunction of Bladder Due to Spinal Anesthesia. E. L. Peirson, Salem, Mass., and C. F. Twomey, Lynn, Mass.—p. 171.
Recurrent Gallstone Ileus: Report of Case. P. R. Hinchey, Salem, Mass.—p. 174.
Athletic and Related Injuries. A. Thorndike Jr., Boston.—p. 180.

Renal Factor in Continued Arterial Hypertension.—

According to Palmer and his associates, removal of the affected kidney of a number of patients with unilateral renal disease associated with hypertension has had a marked and beneficial effect on the blood pressure. During the last four years the authors included genito-urinary studies in the survey of their cases of essential hypertension, but they confined this study mostly to patients under 50 and they included at least one intravenous pyelogram in all new cases. Of 596 patients diagnosed as having essential hypertension, intravenous pyelograms were taken in 212. Forty-seven (22 per cent) of 212 patients with continued arterial hypertension not due to glomerulonephritis showed congenital or acquired deformities of the pelvis or ureters by urography. The deformity in the pyelogram was unilateral in thirty-four (72 per cent) of these forty-seven cases, or 16 per cent of the 212 cases studied. Such deformities are often incidental but, if significant in the etiology of the hypertension, probably represent a participating or precipitating, rather than a major, factor. Various urologic lesions are observed over long periods without the development of hypertension. Continued arterial hypertension is a fairly common occurrence and the coincidental presence of a certain number of the commoner urologic lesions is likely. The comparative incidence of hypertension and urologic lesions should be studied in the general population. Weiss and Parker believe that chronic infection affects the arterioles in some way so as to bring about a hyperplastic intimal change, which in turn causes ischemia and hypertension. This intimal hyperplastic change, according to

Weiss and Parker, after leading to luminal narrowing or even obliteration, is the sine qua non of hypertension in cases of pyelonephritis. When these criteria are applied to the cases discussed in this paper, only two show changes consistent with true hypertensive pyelonephritis. They both showed marked arteriolar hyperplastic changes, lymphocytic infiltration and colloid casts in the tubules. The fact that one of these two cases has been much improved by nephrectomy suggests that the arteriolar hyperplastic change assumes a dominant role in the production of hypertension. That the other case did not respond may possibly be explained by Weiss and Parker's theory that the nephrectomy had been done after the vicious circle—pyelonephritis leading to hypertension, which in turn leads to vascular nephritis in the other kidney—had been established. In considering nephrectomy, the age of the patient and the duration of the hypertension should be considered. In general, it may be said that one should not advise nephrectomy for a unilateral renal lesion when associated with hypertension in women over 45 or men over 50. The factor of congenital predisposition should not be overlooked among patients with continued arterial hypertension. Patients with chronic pyelonephritis, both active and inactive, and those with lesions obstructing the urinary outflow have been followed for many years without the appearance of continued arterial hypertension. The difference between these patients and those with similar urologic lesions and also continued arterial hypertension may lie in the degree of congenital predisposition. The decision to remove the affected kidney, with the hope of curing or modifying the course of the hypertension, is based on three assumptions: that the lesion is not incidental, that there is no vascular disease in the remaining kidney and that there will not be recurrent pyelitis in the remaining kidney.

New Jersey Medical Society Journal, Trenton

37:395-436 (Aug.) 1940

- Pyelitis of Pregnancy. V. P. Butler, Jersey City.—p. 399.
Spirometry as Procedure of Determining Pulmonary Efficiency in Pulmonary and Heart Disease: Failure of X-Rays of Chest in Estimating Pulmonary Reserve. G. G. Ornstein and I. G. Epstein, New York.—p. 401.
How the New Food, Drug and Cosmetic Acts Affect Physicians. C. I. Ulmer, Gibbstown, and R. P. Fischelis, Trenton.—p. 411.
New Jersey Maternal Mortality Statistics 1939. A. W. Bingham, East Orange.—p. 415.

New Orleans Medical and Surgical Journal

93:61-110 (Aug.) 1940

- Rudolph Matas: Dean of American Surgery. E. C. Cutler, Boston.—p. 61.
Medical Societies of Louisiana Prior to the War Between the States. W. D. Postell, New Orleans.—p. 65.
Samuel A. Cartwright and States' Rights Medicine. Mary Louise Marshall, New Orleans.—p. 74.
Acute Aseptic Meningitis: Discussion of Etiology, Epidemiology and Diagnosis. J. G. Pasternack, New Orleans.—p. 78.
Sulphapyridine Therapy in Pneumococcal Meningitis Complicated by Pulmonary Tuberculosis with Recovery: Case Report. Suzanne Schaefer, New Orleans.—p. 83.
Acute Appendicitis in the Female. L. A. Ledoux, New Orleans.—p. 86.
Early Diagnosis and Treatment of Amebic Abscess of Liver. D. N. Silverman and R. J. St. Martin, New Orleans.—p. 90.
Management of Chronic Suppurative Otitis Media. J. R. Phillips, Baton Rouge.—p. 93.
Syphilis Control in Louisiana. F. S. Williams, New Orleans.—p. 95.

New York State Journal of Medicine, New York

40:1131-1204 (Aug. 1) 1940

- Two Milk-Borne Epidemics Traceable to a Single Dairy: Bacillary Dysentery Outbreak. H. S. Ingraham, Kingston.—p. 1135.
Importance of New X-Ray Effect for Daily Diagnostic and Therapeutic X-Ray Work. S. W. Westing, Brooklyn.—p. 1139.
Technic of Modern External Frontal-Ethmoidal Sinus Operation. W. Morrison, New York.—p. 1145.
Pulmonary Tuberculosis: Factors Having Bearing on Its Spread in New York City. H. Beeuwkes and R. G. Hahn, New York.—p. 1153.
The Art of Lip Reading: Its Role in Problems of the Hard of Hearing. S. Zwierling, Brooklyn.—p. 1164.
Differential Diagnosis of Aortic Aneurysm and Aortic Aneurysm: Value of Contrast. I. Steinberg, G. P. Robb and Ursula J.—p. 1178.
Treatment of Menopausal Hyperthyroidism with Estrogenic Substance. S. F. Goldman, A. Goldman and R. Kurzrok, New York.—p. 1178.
Clinical Experiences with Gold Salts in Treatment of Rheumatoid Arthritis. J. M. Tarsy, Brooklyn.—p. 1185.
Colitis Following Injection of Gold Salts. L. C. Kelly, New York.—p. 1192.

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- Libido and Reality in Masochism. B. Berliner, San Francisco.—p. 322.
Introjection, Projection and Identification. R. P. Knight, Topeka, Kan.—p. 334.
Analytic Study of a Cure at Lourdes. S. Blanton, New York.—p. 348.
Dynamics of Dissolution of Transference Resistance. R. Sterba, Detroit.—p. 363.
Structure of the Ego. I. H. Coriat, Boston.—p. 380.
Instinct Dualism in Dreams. L. Jekels and E. Bergler, New York.—p. 394.

Review of Gastroenterology, New York**7:305-372 (July-Aug.) 1940**

- *Etiologic Indications of Early Gastric Cancer. J. Ewing, New York.—p. 305.
Significance of Meckel's Diverticulum in Surgical Abdomen. G. A. Stewart, Baltimore.—p. 310.
Gastrosopic Study of Treatment of Atrophic Gastritis. L. L. Bower, Philadelphia.—p. 313.
Chronic Gastritis: Its Treatment. R. Upham and H. Barowsky, New York.—p. 314.
Diverticulosis and Diverticulitis of Colon, with Particular Reference to Patients Under 40. C. Barse, Boston.—p. 318.
Ileocecal Spasm: Cause of Appendicular Syndrome. B. M. Bernstein, Brooklyn.—p. 321.
Diet as a Prescription in Treating Disease. M. Ant, Brooklyn.—p. 325.
Study of Action of Various Neutralizing Agents on Gastric Acidity: Preliminary Report. C. W. Duden and O. Abel Jr., St. Louis.—p. 334.
Rheumatic Intestinal Necrosis. J. Felsen, New York.—p. 339.
New Concept in Treatment of Pruritus Ani and Description of New Needle. A. Schimberg and R. P. Sinaiko, Chicago.—p. 344.
Treatment of Pneumonia Type No. 1 and Chronic Duodenal Ulcer with Sulfapyridine. T. S. Heineken, Bloomfield, N. J.—p. 346.
Sulfanilamide Therapy in Typhoid Fever. E. S. Goodyear, Kingston, N. Y.—p. 348.
Comparison of Newer Liver Function Tests. R. Finkelstein, E. W. Lipschutz and J. M. Hill, Brooklyn.—p. 351.

Etiologic Indications of Early Gastric Cancer.—Ewing discusses gastric cancer from the morphogenic point of view. He admits that this is medical speculation but hopes that it may suggest something of the etiology of early gastric cancer. Certain constitutional factors which may influence its incidence, such as heredity, must be eliminated. Early gastric cancers appear in several varied forms which suggest entirely different modes of origin and exciting agents. Therefore any attempt to simplify their causation is likely to fail. 1. Congenital abnormalities (misplaced portions of gastric or intestinal mucosa and tissue rests of the pancreas and adrenal) give rise to a small proportion of gastric cancers. For the development of these cancers it seems unnecessary to introduce other factors than those inherent in the growth potentialities of misplaced and embryonal cells. 2. A number of gastric cancers develop on polypoid adenomas. The etiologic problem is identical with that of gastrointestinal polyposis. Here a notable hereditary element, in addition to a special susceptibility of the mucosa to react to chemical irritation or infection by atypical changes in the superficial cells and polypoid outgrowths, exists. This group of cases invites investigation of the chemical and bacterial character of the gastric contents. 3. Another group of gastric cancer is combined with pernicious anemia. Usually a small tumor arises in an atrophic mucosa and an atrophic stomach, and both are the results of the atrophic gastritis. The ultimate etiology must be traced back to the causes of atrophic gastritis. 4. The relations between ulcer and cancer of the stomach are rather close, quite obscure and as yet unexplained. These cases present multiple lesions, usually in association with hypertrophic gastritis and sometimes with an atrophic mucosa. Excavation of a gastric adenocarcinoma, giving rise to ulcer and cancer in the same stomach, has been demonstrated. Under these conditions the appearance of precancerous changes on the edges of the ulcer can be accounted for, but these precancerous or preulcerous lesions would not be the result of the ulcer but the cause of the ulcer. Such lesions, if they escaped ulceration, owing to low digestive activity, would go on to fully developed cancer, whereas, if digestive activity were high, ulceration would supervene and the lesion would become a peptic ulcer. Gastric ulcers do not all arise in this manner, but it seems probable that some do, explaining some of the peculiar combinations and assumed transformations between ulcer and cancer in hypertrophic gastritis. An active cancerigenic agent is sug-

gested in such cases. A possible relation to avitaminosis should be considered and the gastric mucosa in cases of the Plummer-Vinson syndrome should be studied. 5. Pyrogenic infection cannot stand as a specific cancerigenic agent but it does figure in the appearance of carcinoma in chronically infected wounds. While bacterial infection may probably not be included among the direct exciting causes of gastric cancer, it should not be neglected as a contributing cause which affects its course. 6. The gastric cancer which arises exclusively from the chief cells lining the fundi of the glands while the duct cells remain intact produces most of the cellular small cell diffusely growing and highly malignant gastric carcinomas. Some functional stimulus affecting the functioning cells of the glands seems to be a reasonable hypothesis. The great frequency of gastric cancer is not surprising. The organ is exposed to the mechanical burden of excessive quantities of food and drink, to wide variations of heat and cold, to a multitude of chemical irritants in the ingestants, to insults from powerful medicaments, to a multitude of pathogenic and saprophytic bacteria and to regurgitation of foreign digestants in bile and pancreatic fluids, and at the same time it is required to maintain nearly constant functional activity.

Southern Medical Journal, Birmingham, Ala.**33:783-910 (Aug.) 1940. Partial Index**

- Chronic Back Pain with Sciatica. L. Thornton and C. Sandison, Atlanta, Ga.—p. 783.
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Dermatomyositis in Children: Report of Two Cases with Fatal Termination. O. G. Hazel and W. M. Hull, Oklahoma City.—p. 809.
Choice of Hormone Treatment in Male Subgenital Development. D. L. Sexton, St. Louis.—p. 823.
Treatment of Functional Disorders of Female by Radiation of Pituitary Gland. J. Kotz and Elizabeth Parker, Washington, D. C.—p. 832.
Pelviccephalography: Analysis of 503 Selected Cases. W. F. Guerriero, R. E. Arnell and J. B. Irwin, New Orleans.—p. 840.
Tumors Complicating Pregnancy. R. A. Johnston and G. F. Adam, Houston, Texas.—p. 845.
Peptic Ulcer: Résumé of Observation and Study. L. Martin, Baltimore.—p. 851.
Physiologic Factors Affecting Blood Pressure. H. M. Doles, Norfolk, Va.—p. 858.
Humoral Antibody and Tissue Tolerance Induced in Pollen Sensitive Individuals by Specific Therapy: Preliminary Report. Mary Hewitt Loveless, New York.—p. 869.
Review of Recent Research on Drug Prophylaxis and Treatment of Malaria: Report to the National Malaria Committee. H. C. Clark, Panama, Republic of Panama.—p. 879.
Recent Advances in Epidemiology of Malaria. J. Andrews, Atlanta, Ga.; E. C. Faust, New Orleans, and R. B. Watson, Wilson Dam, Ala.—p. 883.
Malaria Control Activities: Report of Subcommittee on Malaria Prevention Activities, 1939, to National Malaria Committee. L. L. Williams Jr., Washington, D. C.—p. 894.
Malaria Mortality in Southern United States for the Year 1938. E. C. Faust and Virginia Parker, New Orleans.—p. 897.
Engineering Phases of Malaria Control. L. M. Clarkson, Atlanta, Ga.—p. 900.

Southern Surgeon, Atlanta, Ga.**9:539-616 (Aug.) 1940**

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Surgical Problems Presented by Jaundice in Infancy and Childhood. S. J. Seeger, Milwaukee.—p. 552.
Nailing of Fractured Neck of Femur Without X-Ray. W. Zuelzer, Dallas, Texas.—p. 566.
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Gastrojejunal Ulceration. J. W. Gibbon, Charlotte, N. C.—p. 593.
Progress and Development in Surgical Treatment of Pulmonary Tuberculosis. F. S. Johns, Richmond, Va.—p. 607.

Southwestern Medicine, El Paso, Texas**24:221-252 (July) 1940**

- Protection of Circulation in Surgery. W. S. Middleton, Madison, Wis.—p. 221.
Eye Conditions of Interest to the General Physician. O. B. Nugent, Chicago.—p. 223.
Refraction and Muscle Balance in Aviation. M. P. S. Spearman, El Paso, Texas.—p. 228.
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Epidemic Encephalitis: Report of Sporadic Case. S. J. Grauman, Tucson, Ariz.—p. 232.
Significance of Convulsions. S. D. Ingham, Los Angeles.—p. 234.

Surgery, Gynecology and Obstetrics, Chicago

71:129-208 (Aug.) 1940

- *Gastroscopic Observations in Cases of Gastric Distress Following Operations on Stomach. H. J. Moersch and W. Walters, Rochester, Minn.—p. 129.
- *Carcinoma of Stomach: Review of 444 Cases to Emphasize Inadequacy of Present Methods for Early Diagnosis. R. H. Abrahamson and J. W. Hinton, New York.—p. 135.
- Dangers of Indiscriminate Coverage of Parenterally Administered Glucose with Insulin. P. C. Eschweiler, Brooklyn.—p. 141.
- Renal Displacement. M. Muschat and L. Edeiken, Philadelphia.—p. 146.
- *Experimental Study of Surgical Treatment of Coronary Disease. M. Fauteux, Montreal.—p. 151.
- Carbohydrate Metabolism in Thyrotoxicosis: I. Experimental Study. E. E. Blanck, Chicago.—p. 156.
- Observations on Roentgenologic Evidence of Fetal Death. H. Thoms, New Haven, Conn.—p. 169.
- Influence of Hot and Cold Application on Gastric and Intestinal Motor Activity. J. D. Bisgard and D. Nye, Omaha.—p. 172.
- Cancer and Its Relations to Pregnancy and Delivery, to Marital and Social Status: II. Cancer of Organs Other Than Reproductive; Total Cancer Mortality. S. Peller, Baltimore.—p. 181.
- Rhinoplasty: Argentine Method. O. Ivanissevich and R. C. Ferrari, Buenos Aires, Argentina.—p. 187.
- Opening of Anterior Tracheal Wall in Tracheotomy. R. Waldapfel, Grand Junction, Colo.—p. 191.
- Bilateral Intercostal Nerve Block for Upper Abdominal Surgery. R. W. Bartlett, St. Louis.—p. 194.
- Slipping of Upper Femoral Epiphysis. H. Waldenström, Stockholm, Sweden.—p. 198.
- Treatment of Adynamic Ileus by Gastrointestinal Intubation in Children. G. C. Penberthy, R. J. Noer and C. D. Benson, Detroit.—p. 211.
- Supernumerary Tarsal Scaphoids. E. K. Cravener and D. G. MacElroy, Schenectady, N. Y.—p. 218.
- Surgical Treatment of Hyperostosing Meningiomas of Sphenoid Wing. J. L. Poppen and G. Horrax, Boston.—p. 222.
- Causes of Death in Cancer of Cervix Uteri. L. S. Auster and A. M. Sala, New York.—p. 231.
- Primary Partial Gastrectomy (Pólya Type) for Duodenal Ulcer: Study of Results in 212 Cases. W. Walters, E. B. Lewis and R. G. Lemon, Rochester, Minn.—p. 240.

Gastroscopic Observations After Operation.—Moersch and Walters review gastroscopic observations on 100 patients who had undergone operations on the stomach and who subsequently developed gastric distress. They concluded that gastroscopy can be of assistance in reaching a better understanding of the factors leading to gastric distress after operations on the stomach. Contrary to the commonly accepted teaching that gastritis is found in all stomachs after operation, in 30 per cent of these cases of persistent dyspepsia gastroscopic evidence of disease was not present. As a rule, in the cases in which abnormality of the gastric mucosa was not demonstrated by gastroscopy the functional factor was found to be rather pronounced, and most patients responded symptomatically to therapeutic measures directed to this end. The diagnosis of gastritis was made on gastroscopic observations in fifty-six cases. In contrast to the cases in which gastroscopy revealed normal gastric mucosa the response to medical management was not as satisfactory, and further operation was frequently required. Postoperative gastritis may be thought to be a manifestation of gastritis that existed before operation. This is often true, and many postoperative complications might be avoided if this possibility was always recognized before operation. On the other hand, it is known that gastritis does develop after operation and also that gastritis which is present before operation may disappear after operation. That gastritis undoubtedly does develop after operation is seen from the fact that evidence of gastritis was present in 56 per cent of the cases in this study. In comparison, Swalm, Jackson and Morrison found gastritis in only 35 per cent of their routine gastroscopic examinations, and Schindler reported an incidence of 41.8 per cent. Speculating about the possible factors responsible for postoperative gastritis, the authors suggest that no doubt in many cases a preexisting gastritis is the responsible factor. In their opinion a poorly placed stoma with inadequate drainage of the stomach is an important factor. Gastritis is not as likely to develop if the stoma retains an activity resembling that of a sphincter. Infection constitutes an important exciting factor. Other lesions, such as gastrojejunal ulcer, carcinoma, gastric ulcer and benign tumor, can and do develop in the stomach after operation, and gastroscopy may be of assistance in their recognition. In five cases in this series carcinoma of the stomach was found on gastroscopic examination and in six cases gastrojejunal ulcer was visualized.

Inadequacy of Methods for Early Diagnosis of Gastric Carcinoma.—Abrahamson and Hinton state that during the last two decades—1919 to 1938 inclusive—444 patients with cancer of the stomach were admitted to the Fourth Division of Bellevue Hospital. Of these 296, or two thirds, were inoperable on admission. After clinical and x-ray examination 148, or one third, were considered operable. However, even in this group exploratory laparotomy proved in sixty-nine cases that no operative measure could be undertaken. In only twenty-four cases, or 5.4 per cent of the total and 16.2 per cent of the 148 operable cases, could gastric resection be done, the only method providing hope for affecting a permanent cure in gastric carcinoma. Thus the outlook is at present a dismal one, since the largest number of cases in which the diagnosis is made are already in an inoperable stage. Often when operability still exists, resectability is impossible. The most dependable confirmations of diagnosis are the x-rays, the gastroscope and the gastric test meal. The latter is the simplest and may be repeated at frequent intervals at relatively little expense. When examination shows a declining gastric acidity, the suspicion of carcinoma must be entertained and disproved. X-ray studies of the stomach should be made with greater frequency in suggestive cases and in those with undiagnosed and vague manifestations. X-ray examination of these patients is necessary, not to verify an already made clinical diagnosis, but for careful search where there is no evidence or only minimal evidence of gastric disturbance. The technic of gastric resection has been perfected and further operative refinements cannot offer hope for lengthening the life span of patients with gastric carcinoma. Their hope resides in the development of a means of diagnosis which will permit surgical intervention when the lesion is pathologically young rather than early in the clinical course. Until more specific tests are developed, each patient should have the benefit of such methods as are at our disposal. Faithful use of the test meal, the x-rays and the gastroscope may help to disclose early carcinomatous lesions. The knowledge of the present dark outlook for the patient with carcinoma of the stomach should be disseminated among all practitioners and students of medicine.

Surgical Treatment of Coronary Disease.—It has been suggested that the similarity of arteriosclerotic disease of the coronary arteries and of the extremities should permit of the application in the heart of surgical methods found useful in the treatment of peripheral vascular disease. Fauteux describes experiments on dogs undertaken to observe the effect of a partial coronary arteriectomy of the ramus descendens and a partial coronary arteriectomy of the same arterial trunk combined with ligation of the vena magna cordis. A high mortality resulted when partial resection of the ramus descendens at a high level was done. When the same procedure was carried out after venous ligation, all dogs, apart from those dying of operative complications and intercurrent disease, remained healthy for over a year. The author concluded that vena magna cordis ligation in occlusion of the left ramus descendens helps to maintain adequate coronary circulation after partial coronary arteriectomy. The results of these experiments suggest that in properly selected cases coronary vein ligation may be expected to act as a preventive measure against a second attack of coronary thrombosis and also to improve the coronary circulation sufficiently to relieve the pain of "angina of effort." It seems a logical procedure in traumatic surgery of the heart whenever it is necessary to ligate an important coronary arterial branch that is bleeding.

Wisconsin Medical Journal, Madison

39:581-700 (Aug.) 1940

- Recognition and Management of Gastrointestinal Allergy. T. L. Squier, Milwaukee.—p. 595.
- Experience with Immunization Procedures in Home and Office Practice. F. R. Janney, Wauwatosa.—p. 599.
- Pediatric-Urologic Problem: Congenital Valves of Posterior Urethra with Case Report. W. M. Kearns and E. B. Jacobson, Milwaukee.—p. 603.
- Fat-Carbohydrate Ratios of Diet and Insulin Requirements in Diabetes Mellitus. R. S. Baldwin, Marshfield.—p. 606.
- Retroposition of Uterus: Evaluation of Its Effect on Certain Phases and Events of a Woman's Life. C. S. Harper, Madison.—p. 610.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2:73-106 (July 20) 1940

- *Preserved Blood, Analysis of Its Use: Report from Merseyside War Blood Bank. F. R. Edwards and T. B. Davie.—p. 73.
Medical Treatment of Peptic Ulcer. E. Spriggs.—p. 78.
Effects of Supplement of Vitamin B (Adsorbate) on Growth of Infants. Margaret R. Price.—p. 80.
Postoperative Pulmonary Complications. B. N. Sircar and F. K. Boston.—p. 82.
Congenital Atresia of Esophagus. Mildred I. Ealing.—p. 83.

Preserved Blood.—On the basis of 1,364 bottles of stored blood, Edwards and Davie sought to determine the therapeutic value of stored blood as compared with that of fresh blood, and the extent to which its availability, standardization of technic and convenience of administration outweighed possible disadvantages. A number of hospitals cooperated in the investigation. Banked blood used by them was preserved in a 3.8 per cent solution of sodium citrate, the unit consisting of 450 cc., of which 45 cc. represented the anticoagulant solution. An apparatus of recent manufacture, supplied with an internal filter of glass shot that prevents clogging of needles and filters and allows storage bottles to remain closed at all times, was used. The blood withdrawing and delivery apparatus together with the "veinseeker" in cases of collapsed veins are illustrated. Wastage of bank blood, about 9 per cent in 1,500 bottles, was due to hemolysis or to accidents, such as overheating of blood and failure to return unused blood immediately to the refrigerator. The investigators noted in comparative transfusions with both fresh citrated and preserved blood that reactions due to the administration of banked blood were probably no greater than those due to fresh blood. Of 1,364 bottles of banked blood sixty-nine (5 per cent) gave rise to grade 3 reaction (definite rigor) with cases of acute posthemorrhagic anemia, chronic secondary anemia and acute septic conditions leading. However, no serious or permanent ill effects were observed. No case of transmitted disease occurred and no definitely infected bottle was found. Five deaths occurred during transfusion of patients who were moribund before transfusion. Of seventy-one patients who died soon after the transfusions only one showed rigor, a child with streptococcal septicemia. In many of these cases, transfusion apparently was a counsel of desperation, for the majority suffered from some disease of severe character. Of all transfusions, 87.5 per cent were considered to be of benefit to the patients. As a life saving measure in cases of acute hemorrhage with or without shock, preserved blood was as efficacious as fresh blood. Of 509 transfusions given for acute hemorrhage, 463 (91 per cent) were considered to be satisfactory. Likewise, in 316 transfusions given for chronic secondary anemia 292 (92 per cent) were regarded in the same way. The authors believe that in the presence of these diseases the ready availability of stored blood in bulk marks a true advance over the individual donor system. For certain other diseases of the hemopoietic system and for cases of anemia associated with sepsis, they regard fresh blood as preferable. They emphasize the importance of absolute correct grouping, the complete cleanliness of all apparatus and the elimination of all pyrogenic factors in the diluent solution. Since grade 3 reactions were undoubtedly increased by the age of the blood, they advise against the use of blood older than ten days.

2:107-142 (July 27) 1940

- *Thoracoscopy of Extrapleural Pneumothorax. R. J. C. Maxwell.—p. 107.
Asthma in Childhood: Discussion of Psychologic Aspect. Muriel Barton Hall.—p. 110.
Treatment of Inguinal Hernia in Adults. J. F. O'Connor.—p. 113.
Scarlet Fever in a Public School. J. K. Bostock.—p. 115.
Use of Plasma or Serum as Substitute for Whole Blood. C. H. Best and D. Y. Solandt.—p. 116.

Thoracoscopy of Extrapleural Pneumothorax.—Maxwell states that, although the walls of an extrapleural pneumothorax may be dry at the completion of pneumolysis, a greater or lesser amount of oozing invariably occurs afterward. Schmidt found

in a review of 200 cases that in a large proportion the pneumothorax space showed subsequently a tendency to obliterate. Roberts expressed the opinion that obliteration is less likely to take place if the blood clot is broken up and aspirated. This is done under thoracoscopic control. The author treated three cases in this way and examined a fourth with the thoracoscope two months after pneumolysis. He describes the endoscopic appearance of the extrapleural pneumothorax in which postoperative hemorrhage occurred. In the extrapleural pneumothoraces in which endoscopy was employed soon after pneumolysis, long stalactites of blood clot with their apexes free and pendulating, or cones already attached to the lung, were seen, either at the first survey or after the softer clot that covered them had been removed. The longer stalactites of fibrin have always been found arising from the anterior chest wall. None of them were attached to the lung. The posterior projections were broader and shorter, cone shaped or sugar-loaf shaped, and in both cases fixed to the posterior surface of the lung. The semiupright position in which patients are nursed and the tendency of the collapsed lung to fall back toward the paravertebral gutter explain the greater length of the anterior stalactites and the apparent paradox that the shorter posterior cones seem more frequently to adhere to the lung. The author points out that thoracoscopy has revealed that oblitative pleurisy in intrapleural pneumothorax is often a sequel to the organization and contraction of interpleural fibrin bands. A similar mechanism is probably at work in the obliterating extrapleural pneumothorax. The fibrin bands are the cones or stalactites.

Edinburgh Medical Journal

47:513-584 (Aug.) 1940

- Debatable Tumors in Human and Animal Pathology: IX. Endothelioma. W. F. Harvey, E. K. Dawson and J. R. M. Innes.—p. 513.
Survey of Biologic Types of Diphtheria Bacillus in Edinburgh, 1932-1939. Helen A. Wright.—p. 541.
Studies on Stored Blood: II. Leukocytes in Stored Blood. A. Crosbie and H. Scarborough.—p. 553.
Id.: III. Oxygen Capacity of Stored Blood. H. Scarborough and J. C. Thompson.—p. 567.
Id.: IV. Modifications in Equipment for Blood Transfusion. C. P. Stewart.—p. 571.

Journal of Hygiene, London

40:377-500 (July) 1940

- Reversed Passive Anaphylaxis in Guinea Pig. M. van den Ende.—p. 377.
*Nonpulmonary Tuberculosis Caused by Bovine Type of Tubercle Bacillus in Children in Eire. C. Mushatt.—p. 396.
Distribution and Significance of Typhoid Vi Agglutinins in Normal Serums of African Natives. L. J. Davis.—p. 406.
Simple Modification of Wilson and Blair's Medium for Isolation of Typhoid and Paratyphoid Bacilli (Brilliant Green, Bismuth-Ammonium-Citrate and Sodium Sulfite Medium—B. B. S. Medium). S. Tyagaraja.—p. 414.
Comparison of Specific Mortality Rates in Town and Country Districts of Scotland Since 1871. R. S. Barclay, W. O. Kermack and A. G. McKendrick.—p. 423.
Reduction of Carcinogenic and Dermatitic Activity of Shale Oil Recovered from Peritoneal Cavities of Injected Mice. J. M. Twort and R. Lyth.—p. 434.
Diet of Group of Durham Miners Free from Nystagmus. C. E. Kellett.—p. 439.
Human Foot Perspiration and Upper Leather. A. Colin-Russ.—p. 447.
Porosity of, and Bacterial Invasion Through, Shell of Hen's Egg. R. B. Haines and T. Moran.—p. 453.
Some Experiments with Certain Liquid Insecticides in Houses Infested with the Bedbug, Cimex Lectularius L. A. J. Musgrave.—p. 462.
Experimental Investigation on Action of Coramin. G. N. Myers.—p. 474.

Nonpulmonary Tuberculosis Caused by Bovine Tubercle Bacillus.—Mushatt isolated strains of tubercle bacilli from fifty hospitalized children up to 14 years of age with nonpulmonary tuberculosis: cervical adenitis, bone and joint disease, meningitis and primary abdominal tuberculosis. Most of the patients were members of working class families. Thirty-seven of the strains of tubercle bacilli were of the human type and seventeen of the bovine type. The gland and joint cases were largely abscesses from which pus was aspirated. Of the fourteen cases of cervical adenitis ten were caused by strains of the bovine type, and four of the twenty-two cases of bone and joint disease and three of twelve cases of meningitis were caused by bovine strains. Material from two cases of primary abdominal tuberculosis yielded human strains.

Journal of Pathology and Bacteriology, Edinburgh

51:1-168 (July) 1940

- Nature of Fatty Change in Kidneys. J. H. Dible and J. D. Hay.—p. 1.
- Effects of Prolonged Estrogen Administration on Male Mice of Various Strains: Development of Testicular Tumors in Strong A Strain. Georgiana M. Bonser and J. M. Robson.—p. 9.
- Structure of Blood Vessels in Cerebral Tumors. J. Gough.—p. 23.
- Inhibitory Action of Potassium Tellurite on Coliform Bacteria. A. Fleming and M. Y. Young.—p. 29.
- Cholesterol Pleural Effusion. H. H. Moll and F. S. Fowweather.—p. 37.
- Lesions in Mouse Produced by Streptolysins O and S. W. G. Barnard and E. W. Todd.—p. 43.
- Production of Pertussis Antitoxin in Rabbits and Neutralization of Pertussis, Parapertussis and Bronchiseptica Toxins. D. G. Evans.—p. 49.
- Relationship of Oxidation-Reduction Potentials Developed in Bacterial Cultures to Production of Hydrogen Peroxide. K. I. Johnstone.—p. 59.
- Changes in Adrenals of Gonadectomized Male and Female Rats Produced by Prolonged Injections of Sex Hormones. Kathleen Hall.—p. 75.
- Pathway of Pituitary Colloid Through Hypothalamus. G. Popják.—p. 83.
- Action of 2-*p*-Aminobenzenesulfonamido-4-Methylthiazole in Experimental Pneumococcal Infections. G. Ivanovic.—p. 91.
- Capsule of Plague Bacillus. S. S. Sokhey.—p. 97.
- Mode of Action of Sulfanilamide. A. T. Fuller, L. Colebrook and W. R. Maxted.—p. 105.
- Comparative Susceptibility of Chick Embryo and Chick to Infection with *Borrelia Duttoni*. R. K. Oag.—p. 127.

Journal of Physiology, Cambridge

98:263-388 (July) 1940

- Effects of Sympathomimetic Amines on Perfused Blood Vessels. M. C. Morton and M. L. Tainter.—p. 263.
- Substance Causing Renal Hypertension. E. Braun-Menendez, J. C. Fasciolo, L. F. Leloir and J. M. Muñoz.—p. 283.
- Electrolyte Content and Action Potential of Giant Nerve Fibers of Loligo. D. A. Webb and J. Z. Young.—p. 299.
- Effect of Renin on Urine Formation. G. W. Pickering and M. Prinzmetal.—p. 314.
- Mechanisms of Dilution Diuresis in Isolated Kidney and Anesthetized Dog. M. Grace Eggleton, J. R. Pappenheimer and F. R. Winton.—p. 336.
- Inactivation of Adrenalin in Vivo in Man. D. Richter.—p. 361.
- Effect of Riboflavin, Riboflavin-Phosphoric Acid and Cortical Hormone on Survival of Adrenalectomized Rats Receiving Normal and Riboflavin-Deficient Diets. H. M. Bruce and R. Wien.—p. 375.

Lancet, London

2:61-90 (July 20) 1940

- Mothers Under 16. Leitia Fairfield.—p. 61.
- *Penetrating Wounds of Chest: Experience in the Last War. J. A. Ryle.—p. 63.
- Intramuscular Administration of Fluids. B. R. Billimoria and E. E. Dunlop.—p. 65.
- Capillary Resistance in Toxic Manifestations of Antisymphilitic Therapy. G. Horne and H. Scarborough.—p. 66.
- *Alum Precipitated Toxoid in Diphtheria: Duration of Immunity After One-Shot Method. F. C. Faragó.—p. 68.
- Treatment of Wound Shock with Corticosterone. H. Selye and C. Dosne.—p. 70.

2:91-122 (July 27) 1940

- Facial Paralysis and Its Operative Treatment. Josephine Collier.—p. 91.
- Chronic Neurotics and the Outbreak of War. Elizabeth H. Rosenberg and E. Guttmann.—p. 95.
- Diphtheritic Myocarditis Complicating Myocardial Degeneration. G. Bourne.—p. 96.
- Ether Convulsions: Report of Case. N. R. James and E. A. Pask.—p. 97.
- Postoperative Distention of Abdomen: Etiology and Treatment. H. Dodd.—p. 98.
- Pfeiffer's Bacillus Meningitis: Two Unusual Cases. J. H. Dowds.—p. 100.
- Local Effects of Sulfonamides on Rabbit's Brain. Dorothy S. Russell and M. A. Falconer.—p. 100.
- Volvulus of Cecum Associated with Reversed Rotation of Middle Gut. C. C. Holman.—p. 101.
- Suprarenal Hemorrhage in Meningococcal Septicemia: Waterhouse-Friderichsen Syndrome. W. H. Grace, C. V. Harrison and T. B. Davie.—p. 102.

Penetrating Wounds of Chest.—Ryle reviews the records of penetrating wounds of the chest admitted under his care during 1917 at a casualty clearing station near Ypres. The patients totaled 130, and thirty (23 per cent) of them died. Since none were discharged to the base until shock, sepsis and hemorrhage were under control and they were judged fit for the long train journey, it is unlikely that there was a high toll of subsequent deaths. In four of the thirty fatal cases there were serious multiple wounds besides the chest wound; seven patients died within twenty-four hours of admission; in one

there was perforation of the gullet besides the lung and a tear in the aorta plugged with thrombus, the patient surviving to the third day; in five there was damage to diaphragm and liver or spleen. If a patient is admitted in bad condition not attributable to other wounds, the cause may be one of the three following: 1. A "leaking" or "sucking" hemothorax or pneumothorax, calling for immediate plugging with wet eusol gauze and a firm pad with strapping or a binder. 2. A tension pneumothorax calling for relief with the needle. The author never saw this as a complication of a penetrating wound; it is more likely to follow a crush injury. 3. Penetration of the diaphragm by a fragment passing through the chest and lung with damage to one or more of the abdominal viscera. A "leaking" hemothorax usually shows a large entry or exit wound from which there is a considerable flow or trickle or rhythmic spouting of blood or bloody fluid. An audibly "sucking" or "open" pneumothorax explains itself and calls for similar immediate treatment. The further immediate treatment in all such cases is the usual treatment for shock or hemorrhage. The procedure in closed hemothorax, apart from appropriate nursing, postural measures and relief of dyspnea and pain, was to wait until the second day and then to needle and withdraw a syringe of blood. This should be examined with the naked eye and the nose. The change from the appearances of normal blood or bloody effusion to the more fluid and purple appearance of laked or hemolyzed blood is soon appreciated. While it remains unlaked and sweet there is no heavy anaerobic infection. In the presence of laking and smell the chest should be drained, and there is no need to await the bacteriologic report. According to the patient's condition and the temperature chart, subsequent needlings for inspection and culture are carried out on the third or fourth and, if necessary, on subsequent days. In patients with the graver "leaking" or "sucking" wounds of the chest who survive the first day or two surgical intervention will nearly always become necessary for purposes of drainage of an infected effusion, toilet of the wounds and comminuted ribs and, when feasible, removal of the foreign body. The time for such action must be determined by the conditions obtaining in each case. The author has no doubt that with earlier admissions and better treatment of hemorrhage and shock early intervention will be undertaken more often than it was in 1917 and that the primary operations with removal of fragments, repair and closure will become more usual and save lives. Such primary operations should never be undertaken unless the patient is likely to remain under close observation.

Alum Precipitated Toxoid in Diphtheria.—Faragó reports experiences with one-shot immunization with alum precipitated toxoid. His investigations were made on 22,000 children in Hungary. He found the Schick test reliable for mass control. The Schick toxin contained a fiftieth of a minimal lethal dose in 0.1 cc. and conformed to the demands set up by the permanent commission of biologic standardization of the League of Nations. The subjects tested were children who had been vaccinated by the one-shot method from one to five years previously and had never received any other diphtheria antigen; they had not even received the Schick test before. The purity of the precipitated and five times washed toxoid is about six times higher than that of the liquid toxoid. It contains about 2 mg. of alum and 47 protective units per cubic centimeter. The precipitate forms about a third of the total volume of the vaccine. The preparation of such a vaccine was justified by the observation that the formation of a depot, slow absorption and a more lasting antigen stimulus is promoted by an increased amount of the precipitate. The reactions produced by the alum precipitated toxoid were not more but rather less than those caused by the old fluid toxoid. The author tabulates separately the results for the age group from 2 to 6 years and from 7 to 11 years. The Schick test on children aged from 2 to 6 years who had received at the age of 2 their only vaccination against diphtheria in the form of 1 cc. of alum precipitated toxoid revealed that the immunity of children below school age is not ideal but, from the practical point of view, sufficient a year after vaccination. Afterward the immunity shows a slight tendency to fall, but the fall never reaches such proportions as to condemn the routine use of the one-shot method. About 80 per cent of the older children were vaccinated with alum

precipitated toxoid at the age of 7, and about 20 per cent from one to two years earlier. Results of Schick tests show that the immunity of this group surpasses that of the younger children. The immunity of children vaccinated at 2 and revaccinated at 7 also was investigated. The results in these may be regarded as the maximum of immunity that can be achieved by immunologic methods. The author concludes that an adequate immunity develops after one injection of alum precipitated toxoid and that this lasts for a sufficiently long period.

South African Medical Journal, Cape Town

14:231-250 (June 22) 1940

- Onyalai in Northern Bechuanaland. A. A. Morgan and B. T. Squires.—p. 231.
Occurrence of Bacterium Flexneri Race P. 119 in South Africa. C. de V. Bevan.—p. 234.
Studies on Venom of "Boomslang" (Tree Snake) (*Dispholidus Typus*). E. Grasset and A. W. Schaafsma.—p. 236.
Observations on Amidopyrine Test for Blood. B. Serebro.—p. 242.
Case of Perforated Tuberculous Pyloric Ulcer and Case of Perforated Duodenal Ulcer in Natives of Southern Rhodesia. M. Gelfand and V. Carlisle.—p. 244.
South African Typhus, with Special Reference to Use of Alum Precipitated Vaccine. M. H. Finlayson.—p. 247.

Schweizerische medizinische Wochenschrift, Basel

70:685-708 (July 20) 1940

- Modern Conceptions of Origin and Development of Human Blood Corpuscles. K. Rohr.—p. 685.
Keratoderma Senile Volae Manuum et Plantae Pedum and Its Cure by Perandren (Androgen Substance). C. Henschen.—p. 690.
Carbon Dioxide Respiration as Test for Changed Irritability of Respiratory Center. R. Meier and R. Müller.—p. 694.
Acute Crisis of Thrombopenic Purpura Following Late Vaccinal Generalization. Elisabeth Regamey.—p. 697.
*Artificial Tympanic Membrane in Comparison with Hearing Devices. Nadoleczny-Millioud.—p. 700.
Foot Troubles in Military Service. R. Scherb, M. R. Francillon and E. Burekhardt.—p. 701.

Artificial Tympanic Membrane in Comparison with Hearing Apparatus.—According to Nadoleczny-Millioud the artificial tympanic membrane is used only in defects of the tympanum or after radical operation, when the hardness of hearing is bilateral. It is hardly ever employed as long as one ear still has adequate hearing. It has the disadvantage of making the patient dependent on the otologist, who frequently has to change or readjust the membrane; moreover, he has to make it and fit it, because the tympanic prostheses obtainable on the market are rarely suitable. Occasionally the artificial tympanum irritates and produces secretion, but this is harmless and disappears quickly; the fear of recurrent suppuration is generally exaggerated. It should not prevent a trial with a tympanic prosthesis in cases in which it is indicated; that is, in all dry perforations or scars. It has one disadvantage in common with the hearing apparatus: noises which the patient did not hear before are now excessively loud. Because of this the patient at first may find it difficult to go to sleep. The artificial tympanum has several advantages: It is not visible from the outside, it causes practically no distortion and it does not make the patient more hard of hearing for some sounds than he is. The available electrical hearing devices do not transmit sounds undistorted. Another advantage of the artificial tympanum is the disappearance or the weakening of subjective sounds (tinnitus). There are two methods of estimating the value of a hearing prosthesis: The first is the exact quantitative and qualitative examination of the auditory capacity with and without the prosthesis; the second is the report of patients who have some knowledge of acoustics and of music and who observe themselves carefully. The author describes in detail the experiences of one patient who had undergone a bilateral radical operation and who had used not only several electrical hearing devices but also an artificial tympanum of silver-leaf. The patient asserted that the acoustic effect of the silver-leaf tympanum was comparable, although not quite equal, to that of a rather large and cumbersome (weight 9 Kg.) condenser-microphone, in which the loudness could be modified and which he used when attending meetings and lectures. The subjective effect of the artificial tympanum, however, is even better than that of the apparatus. It overcomes all self-consciousness because it makes strings and technical devices unne-

cessary. The patient has no difficulty in keeping up a conversation in a small group if the tympanum fits well. The ability to hear everyday noises has a beneficial psychologic effect. The superiority of the artificial tympanum over other hearing aids is due chiefly to the faithful transmission of the high tones up to the fifth-marked octave. Artificial tympanums are now being made not only of silver-foil but also of cellophane. The fact that this hearing prosthesis is suitable for only certain patients is, in the belief of the author, no reason for neglecting it completely.

Anais Brasileiros de Ginecologia, Rio de Janeiro

9:483-570 (June) 1940. Partial Index

- *Vulvovaginal Moniliasis. F. Ruiz Arce.—p. 483.
Intraveneous Euparcon Anesthesia in Minor Gynecologic Surgery. J. Gallucci.—p. 501.

Vulvovaginal Moniliasis.—Ruiz Arce reports ten cases of acute, subacute or chronic vulvovaginal moniliasis in young adult women, with the exception of one who was in the menopause. The patients were in good general, nutritional and hygienic condition. The duration of the infection varied from two months to three years, except one of thirteen years' duration. Three patients in the group had diabetes, three were pregnant, five presented venous engorgement of the pelvis manifested by varices of the saphenous vein and of the small vulval venules, hemorrhoids and engorgement of the local subcutaneous capillaries. A clinical diagnosis was made in the majority of the cases from the symptoms. Acute infection manifested itself by discharge, vulval pruritus intensified at night and before menstruation, pain and burning in the vagina during voiding, increase of local temperature and sometimes leukorrhea. The internal surfaces of the vulva and vagina were red, edematous and spotted with typical mycotic patches abundant at the lower part of the vagina. In some the neck of the uterus was involved. Chronic forms presented a typical appearance of dermatitis suggestive of early kraurosis or atrophic chronic vulvitis. Sometimes the vulva had the aspect of a so-called creamy vulva. The diagnosis was confirmed by smears and cultures from vaginal and vulval secretions. The smears were stained by the Gram method and the cultures grown on the Sabouraud medium. Any attempt to classify Monilia as to definite types is unnecessary for the purpose of a diagnosis. Monilia may be present alone or in association with bacteria. In one case the vaginal secretion contained Monilia and Trichomonas. Satisfactory results were obtained in all cases from daily topical application of a 2 per cent gentian violet solution.

Prensa Médica Argentina, Buenos Aires

27:1475-1522 (July 17) 1940. Partial Index

- Recurrent Emphysematous Spontaneous Pneumothorax. M. R. Castex, E. S. Mazzei and J. M. Remolar.—p. 1475.
*Tuberculous Cavities of Lung. H. A. Passalacqua and M. O. Dunan.—p. 1491.

Suction Drainage of Tuberculous Cavities of Lung.—Passalacqua and Dunan emphasize the value of Monaldi's suction drainage of tuberculous cavities of the lung. Three cases are reported. The method consists of puncturing the cavity through the thoracic wall with a trocar, introducing a thin rubber catheter, fixing the external segment of the catheter to the thoracic wall and connecting its distal end to a system of continued siphonage. The site of the puncture and direction of the trocar are determined from the position of the cavity as ascertained by x-ray examination. The depth of introduction of the catheter is determined by the number of centimeters the trocar traverses from the thoracic wall to the cavity. The catheter is clamped for the first twenty-four hours if blood does not appear in the secretions removed by a syringe, and for two or three days if there is blood. On the day or days when the catheter is clamped, the clamp is released at intervals of from eight to twelve hours and the secretion is removed by aspiration with a syringe, after which the catheter is connected with the suction system. Continuous aspiration is maintained for the first few weeks, up to the time when the cavity collapses and expansion of tissues about the cavity is demonstrated in roentgenograms. The suction is then discontinued for a few hours a day, during meal time and sleep. Suction

is continued until healing of the cavity takes place. The process of healing of the cavity is paralleled by the improvement in the clinical symptoms and general condition of the patients. Fever and toxic symptoms disappear early in the course of treatment, the amount of sputum and secretion diminish and disappear, the tubercle bacilli disappear from both the secretion and the sputum, and the appetite and general condition of the patients improve. The proper position and functioning of the catheter are verified at intervals. If the catheter becomes obstructed, it is cleared by aspiration but never by insufflation of air. The catheter remains in the cavity for from two to five months. Removal of the catheter is determined by the healing of the cavity as demonstrated in roentgenograms. The channel left by the catheter heals spontaneously without formation of a fistula.

Semana Médica, Buenos Aires

47:225-280 (Aug. 1) 1940. Partial Index

Fetal Adenoma of Thyroid in Child: Case. J. L. Monserrat and J. M. Pelliza.—p. 260.

*Acetarsone in Dementia Paralytica. N. G. Blaiotta.—p. 266.

Acetarsone in Dementia Paralytica.—Blaiotta reports fifteen unselected cases of dementia paralytica treated by subcutaneous injections of acetarsone and a bismuth compound. The injection, in a dose of 1 Gm. of acetarsone, was given three times a week in a series of twenty-one injections with intervals of a month and a month and a half, respectively, between the first three series and of two months between further series. Duration of the treatment was determined by the behavior of the cerebrospinal fluid. The latter showed favorable alteration by the end of the first or second series when the results of the treatment were satisfactory, except when paradoxical reactions took place. The bismuth preparation was administered in combination with the arsenical treatment as soon as favorable modification of the cerebrospinal fluid was noted. Twelve of the patients were given the arsenical and bismuth treatment alone, two patients were given the treatment one year after failure of malarial therapy and insufficient arsenphenamine treatment, and for one patient, in an advanced stage of the disease, the treatment was changed to malarial therapy, which failed. The dementia forms with agitation or with megalomania were predominant in the group. Only one patient was ambulant. The remaining fourteen were kept in bed early in the course of the treatment. Of the group of patients treated by arsenic and the bismuth compound six had a complete remission, five resumed work and two discontinued treatment in the course of incomplete remissions. One patient exhibited a paradoxical reaction of the cerebrospinal fluid with cyclic delirium. Two patients had a physical and serologic improvement but the mental condition remained unchanged. One died from cachexia in the course of the treatment and the treatment of one failed. The two patients who had had malarial therapy improved. Twelve patients improved from the treatment, two died from dementia paralytica and the treatment of one failed. No complications occurred. The author concludes that the arsenical-bismuth therapy in dementia paralytica is effective and that blindness will not occur if proper indications and small doses even divided are adhered to.

Sovetskiy Vrachebnyy Zhurnal, Leningrad

June, 1940 (No. 6) Pp. 401-480. Partial Index

Problems of Scientific Investigation of Bacillary Dysentery. O. O. Gartokd.—p. 401.

*Basic Principles in Bacteriophage Therapy in Bacillary Dysentery. S. V. Viskovskiy.—p. 411.

Chemotherapy of Epidemic Cerebrospinal Meningitis. P. S. Chulkov, K. Ya. Krauklis and G. N. Christovich.—p. 417.

Sulfidine Therapy in Pneumonia and Meningococcal Meningitis of Young Children. A. F. Karaev and B. S. Dunayevskaya-Tarnogradskaya.—p. 427.

Zinc-Iontophoresis Therapy of Infected Wounds. N. N. Mishuk.—p. 435.

Bacteriophage Therapy in Bacillary Dysentery.—The disappointing results with vaccine treatment of bacillary dysentery, according to Viskovskiy, are to be explained by the variability of bacilli of dysentery, as a result of which the polyvalent vaccine could not be definitely specific. The discovery of bacteriophage by d'Herelle made possible the preparation of a substance with a specific destructive effect on the

agent of bacillary dysentery. Viskovskiy reports on 3,549 patients with various forms of dysentery treated with bacteriophage in the course of the last three years. A control group of 5,398 patients were treated according to the orthodox regimen. The effect of the bacteriophage therapy is that of sterilization. It possesses no antitoxic property. For this reason the author adheres to the combined bacteriophage and serum therapy. The bacteriophage was given by mouth. Because the bacteriophage is completely inactivated by even traces of hydrochloric acid, the stomach contents must be evacuated prior to administration of the bacteriophage or the acidity neutralized by administration of from 10 to 15 cc. of a 5 per cent solution of soda. Bacteriophage therapy is effective only in the early days of the disease. It is without any effect after the fifth day because the predominant role at this stage is no longer assumed by the microbe but by the profound alterations which have taken place in the bowel, in the vegetative nervous system and in the metabolism. The bacteriophage is given in a repeated dose forty-eight hours after the first, or after twenty-four hours when the first dose has not given the expected clinical results. Comparison of the two groups showed that in the group treated by the bacteriophage there was no increase in the summer mortality, while in the control groups it rose from 2.8 per cent to 4.24 per cent. Mortality in the group due to the Shiga bacillus was lowered three and a half times as compared with the control group; in the group caused by Flexner bacillus twice, while in a group of 160 cases caused by the Kruse-Sonne organism there was only one death. The author concludes that, while the mode of action of the dysentery bacteriophage in a human organism has not been elucidated, the effect of its therapy is superior to any one measure so far advanced.

Acta Medica Scandinavica, Stockholm

104:427-525 (June 27) 1940

Frequency of Prolapsus Disci Intervertebralis as Cause of Sciatica. T. Andersen.—p. 427.

Adrenaltropic, Hypophysial Hormones in Cerebrospinal Fluid During Arterial Hypertension in Man and Dog. A. van Bogaert and F. van Baarle.—p. 462.

Influenza Epidemic of February-March 1939 in the Garrison at Groningen. J. Mulder.—p. 481.

*Treatment of Infectious Mononucleosis with Specific Convalescent Serum. H. C. A. Lassen and S. Thomsen.—p. 498.

Amyloidosis Induced by Tumors of the Kidney. E. Ask-Upmark.—p. 512.

Specific Convalescent Serum in Infectious Mononucleosis.—Lassen and Thomsen report the successful use of specific convalescent serum in twelve cases of infectious mononucleosis, nearly all presenting severe angina with considerable lymph node enlargement, selected from a larger number serving as control groups. The serum was obtained from the blood of adult patients one or two weeks after they had become free from fever and was injected intravenously in total doses varying from 60 to 300 cc. The control groups were treated respectively with nonspecific serum (diphtheria antitoxin in forty-five of fifty cases), with neoarsphenamine or symptomatically with analgesics and antipyretics. One fourth (25 per cent) of the twelve cases showed a critical fall of temperature within twenty-four hours, an additional 50 per cent (six) within the first forty-eight hours. All twelve patients felt subjectively improved within twenty-four hours after the injections; eleven (92 per cent) exhibited a distinct objective improvement within the same period. No subsequent complications were noted, such as peritonsillar abscess or otitis. Comparably, in the largest control group preponderantly treated with diphtheria antitoxin only 34 per cent (seventeen) showed a fall of temperature within forty-eight hours and none within twenty-four hours, although the patients of this group had been given treatment twenty-four hours after hospitalization. Results such as those obtained in the twelve cases were observed in only a small number of the patients treated otherwise than by specific convalescent serum. Neoarsphenamine appeared to be ineffective although this group (twenty-seven) included cases of considerably milder attacks of the disease. The authors believe that infectious mononucleosis has not quite so favorable a prognosis as was formerly assumed and that a considerable number of cases may be mistaken for septic angina, malignant diphtheria or lesions of the central nervous system.

